ON TO 2050: Initial Recommendations of the Mobility Chapter

CMAP staff is distributing this working draft of the ON TO 2050 mobility recommendations to related CMAP committees, partners, and interested stakeholders for initial review. Please note this is a preliminary draft that will undergo some refinement of text and graphics (and closer proofreading) before being released for public comment in the full draft plan on June 15th.

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Note: ON TO 2050 will be conveyed primarily on the web. The structure assumes that readers will not approach the document linearly. The plan will be organized around five topical areas, each containing a set of recommendations that may repeat across chapters, as will some strategies within those recommendations. Each recommendation will describe its support for the three principles of the plan.

Introduction

The region's transportation network is poised at a critical juncture. Travel patterns are changing in response to rapidly evolving technologies that make for a future that is both uncertain and promising. Yet we cannot stand still by deferring important decisions that will shape the system for decades to come. In fact, while continuing to deal with past choices made or -- at times -- deferred, our region must take bold steps both to address today's problems and to anticipate future opportunities for achieving well-integrated multimodal transportation system for seamless movement of people and goods within and through the seven counties of metropolitan Chicago.

[GRAPHIC: Photo essay]

Making this vision our regional reality will require collective action to overcome inherent obstacles between existing assets and organizations. While some strategies may require action from the state or federal governments, increasingly this region and its local governments must rely on each other for homegrown solutions, including the revenues necessary to support the system of mobility that is the engine of our economic prosperity and quality of life.

Transportation agencies, counties, and municipalities will need to magnify coordination efforts and take swift action to adopt and regulate new technologies, make the transit system competitive, end fatal crashes, and advance inclusive economic growth. Crucially, they will need to create new revenue streams to improve conditions on the existing transportation system as well as make limited and highly targeted capacity expansions.

The three principles of ON TO 2050 are embedded throughout the Mobility chapter, which includes strategic recommendations to:

- Prioritize investments in existing infrastructure while securing new revenues for needed enhancements.
- Improve resilience by building infrastructure that withstands changes in climate, technology, and funding constraints.
- Promote inclusive growth by improving connections and mobility options for low income communities and people of color.

A modern, multimodal system that adapts to changing travel demand

Each day we see new signs of profoundly shifting mobility patterns in the Chicago region and beyond. After decades in which automobile use consistently increased, the last decade has seen it remain relatively constant, while the other modes people use to get around have diversified.[1] Transit ridership has also changed, with rail overtaking bus for the first time in 2015.[2] Freight rail is also changing. While intermodal freight volumes fell during the last recession, they have since experienced a significant rebound, growing some 30 percent between 2009-14.[3] Biking, walking, and working from home are on the rise. In the years since GO TO 2040 was adopted, people have begun to take advantage of new, technology-enabled ways of getting around, including bike sharing, car-sharing services like Zipcar, and transportation network companies (TNCs) like Uber and Lyft. Automated vehicles (AVs) are gradually emerging from the test tracks and onto streets and highways elsewhere in the U.S., with their advent here viewed as inevitable if not imminent. These still nascent technological trends will continue to intersect with economic and demographic shifts to transform how residents and businesses want to use the region's transportation system in the coming decades. Because of the many benefits of a vibrant multimodal transportation system, ON TO 2050 sets a target of increasing the share of commuters who travel to work by a mode other than driving alone. Our transportation agencies, local governments, businesses and residents must work together, making decisions and investments that help the system anticipate and adapt to changing travel demand.

[Graphic: Non-Single Occupancy Vehicle commute mode share by mode]

Harness technology to improve travel and anticipate future impacts

The evolution of transportation technology seems probable only to gain momentum in the years ahead. In the near term, existing technologies can improve the safety, efficiency, reliability, and resilience of our transportation network. In the long term, emerging technologies like connected and autonomous vehicles and private mobility services like carsharing and ridesourcing present both a remarkable opportunity and a challenge for regional planning. The region's transportation providers can use the increasing availability of real-time data, expanded communications technology, and emerging approaches to demand management and mobility

[1] "Travel Trends: Understanding How Our Region Moves" (CMAP, September 2016), http://www.cmap.illinois.gov/onto2050/snapshot-reports/transportation-network/travel-trends.

[2] "Transit Trends: Exploring Transit Use and Investment" (CMAP, November 2017), http://www.cmap.illinois.gov/onto2050/snapshot-reports/transportation-network/travel-trends.

[3] "The Freight System: Leading the Way" (CMAP, May 2017), http://www.cmap.illinois.gov/onto2050/snapshot-reports/transportation-network/travel-trends.

to more effectively use the transportation system already in place today and prepare for future technological advances. By strategically employing technology, we can improve the way this network functions in support of community livability and economic vitality.

Some of the most promising innovations could improve travel time reliability, that is, reduce variation and increase predictability for the same trips compared day-to-day. FHWA estimates that 60 percent of travel delay nationwide is actually caused by non-recurring sources like crashes or other incidents, construction, and weather.[4] Because these factors are less predictable than daily congestion factors such as travel demand and system capacity, they cause unreliable travel that costs drivers, transit riders and businesses that must budget extra time and expense to avoid being late for work, appointments, or deliveries. ON TO 2050 sets a target of improving the reliability of travel on the interstate system, which will have broad benefits for the entire transportation system.

[Indicator: Reliable person-miles traveled on the Interstate system]

Reliability is best improved by changing how roads are managed and operated, rather than expanding the system. Increasingly, highway management involves data, communications, and technologies that help system managers optimize traffic flow, and detect and respond to situations as they arise. On a regional scale, this will involve coordination and communication between highway agencies, emergency management services, transit operators, and real-time traveler information services, paired with extensive deployment of communications and data processing infrastructure. Because incidents on one agency's road network can have major impacts on other networks, the region clearly needs a more holistic, integrated approach to traffic management. This is particularly true in congested corridors where the interstate and arterial systems interact and deteriorating traffic conditions on one system affect the performance of the other.

[Infographic: technology investments and their benefits for travel reliability]

CMAP evaluated a number of strategies for improving reliability and found that enhancing incident management, facilitated through better information sharing, was among the most effective approaches.[5] Similarly, implementing traffic management centers (TMCs), another strategy that relies heavily on better information exchange facilitated by technology, is extremely effective. Information exchange can improve response to changing situations like special events and other variations in traffic by allowing transportation agencies to change traffic signal timing, alter ramp meter timing, provide real time traveler information, and take other steps to balance travel demand among arterials, interstates, and transit services in a corridor during peak congestion and major incidents. While there are some existing examples of

[4] "Traffic Congestion and Reliability: Trends and Advanced Strategies for Congestion Mitigation" (Federal Highway Administration, September 2005), https://ops.fhwa.dot.gov/congestion_report/index.htm.

[5] "Congestion Report (IN PROGRESS)" (CMAP, 2018).

limited corridor-level integration where agencies manage arterial traffic signals to improve safety of expressway ramps and mainlines and where different system operators post messages about conditions on other corridor roadways, more progress is necessary to meet regional goals for system reliability. Future mainstream adoption of connected vehicle technology, which can allow vehicles to communicate with one another as well as with traffic signals, TMCs, and other infrastructure can amplify the effectiveness of investments in modernized infrastructure.

The transit system can also benefit from adopting innovative technologies. Even in the highest ridership corridors, transit only captures a fraction of the potential travel market. Reevaluating these corridors may reveal opportunities to improve services and employ some of the technologies developed by private sector mobility services. Traffic management centers can provide operators with more timely and accurate performance data to better manage their systems. Sensors, GPS tracking capabilities, and communications infrastructure being implemented by Metra as part of Positive Train Control not only improve system safety but also offer additional opportunities to collect and share real-time travel information about the system. Real-time arrival/departure times, travel times, occupancy levels, and even incident-related information about buses and trains can provide passengers additional information to plan their transit or multi-modal commutes. Routes with transit signal priority can make transit trips faster and more reliable than passenger vehicle trips. See the *Make transit more competitive* recommendation for more information.

The pace and disruptive nature of technological change makes it difficult to predict just how transportation will evolve by 2050. Much discussion of technology's potential impacts generally revolves around two divergent outcomes. In the first, personal ownership of AVs would result in more inefficient land development, less public transit use, and increased traffic from low-occupancy or even unoccupied vehicles. In the second, more preferable future, fleets of shared vehicles would reduce individual car ownership, facilitate more dense, walkable development patterns and increase transit ridership, walking, and biking. The region can make decisions and policies now for guiding the future impacts of AVs to meet regional goals. These policies also often meet existing goals for the system, such as implementing managed lanes to increase travel choices. With strategic investments and policy interventions, we can shape the development of emerging technologies and better position the Chicago region to achieve economic vitality and improved quality of life for all. Such decisions about investments and policies should be coordinated across many levels of government with participation by residents, civic leaders and the private sector.

[Graphic: potential land use and transportation impacts of autonomous vehicles]

Technologies discussed in this recommendation have the potential to generate more data on mobility than ever before. Increased real-time transportation data can provide a deeper understanding of travel behavior and help agencies make informed decisions about investments, policies, and operations. The private sector, particularly goods movement companies and TNCs, has already benefited from such data to improve operations, decrease

delivery/travel times, and create new services, but they often resist sharing data with public agencies or participating in open data portals, citing privacy and competitive concerns. Even data systems within an individual public agency may be fragmented and difficult to use, hampering staff from fully harnessing operational data for decision making. Infrastructure, processing power, consistent systems, and extensive coordination will be required to make the best use of emerging technology and data resources.

The following outlines strategies and associated actions to implement this recommendation.

Coordinate traffic operations region-wide

Coordinated traffic operations involve collaboration between transportation agencies to collect data, monitor and adjust equipment, detect traffic incidents, reroute travelers, and dispatch resources to address problems on the region's roadways. Traffic management centers are the hub of this coordination. The region's largest TMCs are the Illinois Tollway Traffic and Incident Management System and IDOT's ComCenter.[6] Counties and cities in the region operate TMCs at various scales and with varying degrees of coordination.

The ability for traffic signals to adapt to changing conditions is a key component of coordinated operations, but many of the region's signals currently operate on fixed timing plans. These signals are not only unable to adapt in real-time to changing conditions, but they also may have timing plans that are out of date, created years or even decades ago when traffic volumes were significantly different from current and anticipated conditions. Updating these older signals in areas with high current bus ridership or planned high-frequency bus service should be a high priority to make them compatible with future transit signal priority implementation. The RTA is leading the Regional Transit Signal Priority Implementation Program, which has identified 13 transit corridors spanning about 100 miles of roadway and 400 signalized intersections as strategic corridors for TSP implementation.[7]

> *CMAP, IDOT, and local agencies* should work towards implementing a regional, multi-jurisdictional traffic management center, either virtual or traditional.
>
> *IDOT, the Tollway, and local agencies* should enhance communication and coordination to improve work zone management.
>
> *Highway and transit agencies* should continue to share operational information and expand coordination opportunities.

[6] "Highway Operations" (CMAP, February 2017), http://www.cmap.illinois.gov/onto2050/snapshot-reports/transportation-network/travel-trends.

[7] "Regional Transit Signal Priority (TSP) Implementation Program," *Regional Transportation Authority*, accessed March 28, 2018, http://www.rtams.org/rtams/transitSignalPriority.jsp.

CMAP should work with stakeholders to develop a regional communications master plan and update the regional ITS architecture.

CMAP and partner agencies should establish a program to modernize traffic signals, including the provision of transit signal priority.

Highway agencies should review traffic signal policies, ensure up-to-date signal timing plans to minimize delay and crashes, and should implement adaptive signal timing where appropriate.

CMAP should continue to maintain its highway traffic signal inventory.

CMAP should work with *transportation agencies* to fund and execute planning activities that work towards implementing active expressway management, active arterial management, and integrated corridor management

Continue to plan for system modernization while making progress toward a state of good repair

The region should take advantage of every opportunity to modernize, improve, and enhance our transportation system while bringing it into a state of good repair. If paired with maintenance activities, these improvements can be accomplished at lower cost than if they were stand-alone projects. Although transportation agencies do regularly undertake such modernization efforts in conjunction with required maintenance, they could accomplish even more with additional advance planning. To cite several examples, reconstruction of a roadway can enable the laying of communications fiber. Routine rehabilitation of transit stations is often an opportunity to install real-time passenger information technology. Requiring the installation of empty communications conduit when projects are built would decrease the cost of adding fiber in the future. Identifying all potential synergies and efficiencies between modernization and state of good repair will require additional communication across departments within agencies.

Transportation agencies should coordinate on a future communication plan, so that they can incorporate features during normal roadwork that make expansion to build the system easier and cheaper.

Transportation agencies should build discussion of modernization opportunities into project development processes.

Establish pricing and regulatory frameworks that positively shape the impacts of autonomous vehicles and other technologies on infrastructure and land use

The impacts autonomous vehicles will depend on the cost and convenience of low- and zero-occupancy vehicle travel for individuals and commercial services, while the long-term direction

of these advancements could incur great public cost. On one hand, decline of car ownership in dense urban neighborhoods might allow substantial reallocation of road space, yet some suburban areas could see increased demand for automobile-oriented development. Many decisions about safety and design standards will be made at the federal level, but regional and local agencies will need to implement policies to manage the public costs of low- or zero-occupancy vehicle travel. New pricing strategies can support the competitiveness of high capacity public transit, ensure funding is available for infrastructure and operational maintenance and modernization, and temper the demand for low occupancy vehicle use.

CMAP and its partners can influence the deployment of emerging technologies through strategic and coordinated policies. The region should avoid prohibiting or mandating specific technologies and focus on integrating new technologies into existing transportation systems and services in ways that leverage the new services' strengths and help achieve regional objectives around congestion management, emissions reduction, reinvestment in existing communities, and promoting inclusive economic growth. In the near term, the region will need policies to produce better outcomes such as requiring private mobility services to provide information needed to understand impacts and set policies on such services, and expanding the use of geofencing and designated dropoff areas in congested or transit-rich corridors. Over the long term, the region must identify and implement pricing and infrastructure strategies to ensure that AVs and other emerging technologies provide sustainable benefits.

> *CMAP and partner agencies* should implement managed lanes on the region's expressways and explore other pricing policies that could manage increased travel caused by autonomous vehicles
>
> *CMAP* should convene and coordinate regional stakeholders to engage in national and state-level conversations about autonomous and connected vehicle policy and industry standards.
>
> *CMAP and RTA* should collaborate to establish regional TNC policy guidance, and the *transit agencies and local municipalities* should implement recommended policies
>
> *CMAP* should assist *local governments* in establishing policies for emerging technologies that support local goals for land use and development.

Identify public investments that could catalyze emerging technologies

Because it is impossible to predict exactly which technologies will be in use by 2050, our core investments must be flexible enough to enable a wide range of potential outcomes. For example, most innovative transportation technologies, from real-time traffic information to automated vehicles, will rely on a robust communications network. No region-wide inventory of transportation-related fiber-optic cable location and condition currently exists, which makes planning for expansion opportunities more difficult. Building out a regional communications

infrastructure network should be a high priority for the region's many transportation implementers. Also, pilot testing of automated and connected vehicle infrastructure might provide opportunities to promote adoption these technologies.

Identifying these opportunities will require new tools and analytical techniques as well as effort from the public and private sectors to collaborate on transparently providing data and information. Implementers will also need to better understand the long-term financial implications of technology investments. For example, the many transportation agencies in the region who implement and maintain ITS equipment could benefit from a shared understanding and vision for the transition to connected vehicles. CMAP's current role in convening the Advanced Technology Task Force could position the agency well to pursue analysis of connected vehicle opportunities in the Chicago region.

CMAP, IDOT, and civic organizations should coordinate with partners in academia and public agencies to develop analytical tools and track the impact of emerging technologies.

Federal government, CMAP, transit providers, or IDOT should conduct an analysis of places where deployment of technologies could provide the greatest benefit to the region.

RTA, IDOT, CMAP, and other programming agencies should fund pilot projects of technologies that attempt to address regional transportation issues.

The region's transportation providers and CMAP should closely track and report back on other pilots, including successes, failures, lessons learned, and evaluation of results against our regional goals.

Design streets, curb space, and sidewalks to support emerging transportation needs and walkable communities

Urban neighborhoods, suburban downtowns, and commercial corridors must serve many types of travel and uses, from pedestrians to trucks and from mom-and-pop stores to mixed use developments. These interactions are becoming more complex due to the rise of online shopping and associated deliveries, increased biking and walking, and the advent of innovative commercial mobility providers.

Accommodating diverse needs in urban space is already complex, with many potential solutions. Given the fast pace of change in mobility, CMAP and partners can play a role in monitoring these trends and establishing best practices. CMAP should work with communities to pilot new approaches and develop strategies that can support emerging mobility options and preserve vibrant, walkable communities.

CMAP and partners should research emerging strategies and best practices in parking and curb space management.

Local governments should reduce or eliminate minimum parking requirements or set maximum parking limitations in some locations.

Local governments should price on-street parking to manage demand in dense areas.

CMAP should prioritize parking studies in the LTA program.

Municipalities, CMAP, and Metra should analyze parking utilization and supply at adjacent transit stations to evaluate the potential for alternative land uses and parking allotments to support TOD.

Ensure that emerging transportation technologies support inclusive growth

Without thoughtful implementation, emerging transportation technologies may be cost prohibitive for lower income households and municipalities with less fiscal resources. On the other hand, in combination with continued support for traditional public transit, shared mobility and automated vehicle technologies have the potential to improve mobility in low income neighborhoods, including improving access to jobs that may currently require long transit trips or connecting multiple modes.

Communities with limited resources will be less able to anticipate and respond to changing land use and traffic patterns caused by evolving transportation technologies. They may also be less able to purchase sensor, communication, and data processing equipment that could allow them to reap the benefits of new technology. For example, without careful planning, AVs could exacerbate an existing trend in which disinvested communities see increased vehicle speeds on roads that were originally designed to accommodate higher volumes of human-operated vehicles, making them increasingly difficult and dangerous for bicyclists and pedestrians. At the same time, innovative technologies could reduce the need for car ownership, reduce household and municipal transportation expenses, attract new investment, and better serve residents of economically disconnected communities.

CMAP should help communities identify the potential benefits and pitfalls of new technologies with regard to economic competitiveness, affordable mobility, and local quality of life.

RTA and CMAP should develop guidance to ensure that partnerships with private mobility services provide clear economic benefits to the public transit agencies and include protections for low income communities against sudden changes in the private market.

CMAP should play a leadership role to identify gaps in the transportation network for economically disconnected communities, and work with public transit agency and private sector partners to identify solutions.

IDOT, counties, and other transportation providers should ensure that disinvested communities are not adversely impacted by or excluded from improvements intended to facilitate new transportation options.

Make the collection, sharing, and analysis of public and private sector transportation data a regional priority

To make data-driven decisions, the region's transportation providers require such information from all elements of the network, public and private. It is particularly important to leverage data to better understand nonmotorized, freight, and TNC travel, each of which has been difficult to measure and analyze. More data on the behavior of cyclists and pedestrians may become available with increasing deployment of sensing technology within public rights-of-way and the ability to connect those sensors wirelessly. The region has greatly advanced its understanding of truck travel through the use of new data sources and monitoring systems, but data on rail movements is limited.

While CMAP has made progress in collecting new data on rail performance in recent years, this information is aggregated to a high level and would not allow the prospective evaluation of individual rail projects. Private rail operators must demonstrate sufficient public benefits before tax dollars are invested in private projects. Appropriate data from the freight rail industry -- including speeds, volumes, and reliability of freight trains along specific corridors and at key rail-rail crossings -- is necessary for this type of analysis. Existing and emerging private providers have broad impacts on the transportation network, impacts that need to be part of investment decisions. Local governments and transit agencies should work with TNCs and other private transportation providers to obtain the data necessary to make sound decisions. While private companies clearly have the right for their sensitive data to be kept secure, the public likewise must be able to assess whether its limited infrastructure dollars are being invested wisely. CMAP has a proven history of safeguarding sensitive data, and will continue to have a major role as a regional data aggregator to promote data consistency and availability throughout the region.

Public agencies also need to invest in their own data analysis, storage, and sharing capabilities. Such agencies, particularly lower capacity ones, may be less able to collect and manage transportation data as it increases in volume and complexity. Private companies are offering an increasing number of data collection, analysis, and visualization services, which reduce the need for public agencies to invest in internal data management expertise, but increase the dependency of public agencies on third-party tools. Public agencies should own data provided by private agencies via contract or concession agreement. In turn, the public sector has its own valuable datasets, including information on real-time system performance, condition, and

incidents. The public sector must navigate competing mandates to provide open access to government data and protect the privacy of residents.

CMAP should promote responsible data stewardship among partner agencies such as the City of Chicago, RTA, transit providers, counties, and communities to help cost-effectively collect, process, share, and store transportation data.

The public sector should identify ways to leverage provision of more detailed data and analysis to private companies while still protecting riders' privacy.

Private sector partners should share data that substantially aids planning for emerging mobility services, transit, and the road network.

Municipalities and transportation agencies should contractually require data sharing as a condition for access to public infrastructure (roadways, loading areas, etc.) or subsidies.

CMAP and partners should improve data on non-motorized modes of transportation.

Private rail partners should provide substantive documentation of and data supporting the public benefits of future CREATE projects and allowing assessment of potential rail improvements that could benefit passenger movements.

Make transit more competitive

Our transit system is one of metropolitan Chicago's most critical assets, allowing travelers to avoid congested highways and connecting people to jobs when they lack access to a car. Increased transit ridership reduces greenhouse gas emissions, reduces roadway congestion, and improves air quality. The region's long-established transit network is extensive: Together, the CTA, Metra, and Pace provide more than two million trips each weekday at a cost per rider that is among the nation's lowest.[8] However, the system also faces numerous challenges. The prior comprehensive regional plan, GO TO 2040, set aggressive goals for transit ridership, which is not increasing fast enough due to various interrelated factors that include stagnant population trends, minimal supportive land use changes, reduced transit service levels, and competition from emerging private transportation services.

In areas with rising transit use, this growth is occurring at times and locations that strain local capacity. Bus ridership, historically the region's highest mode of transit, has been declining while rail ridership has been increasing.[9] Population and employment have declined

[8] "Transit Trends."

[9] "Transit Trends."

substantially along the southern branch of CTA's Red and Green Lines as well as on the Metra Electric and Rock Island lines.[10] At the same time, ridership has boomed on CTA and Metra stations serving Chicago's North Side and at the outermost stations of many of its lines.[11] Since 2000, weekend ridership has grown faster than weekday ridership on all modes of transit.[12] ADA paratransit service in our region has grown dramatically in response to intensifying demand and likely will continue to grow as the population ages.[13] Shifts in transit ridership create challenges for the transit agencies, both in terms of providing sufficient capacity on the North Side to serve burgeoning demand and in allocating appropriate service levels to areas across the region where ridership is declining. Despite these challenges, ON TO 2050 continues to set an aggressive target for transit ridership growth, paired with increased density near transit and reinvestment in struggling communities.

[INDICATOR: Annual unlinked transit trips]

The transit agencies are experiencing a capital funding shortage, with mounting state-of-good-repair and modernization needs. While the transit agencies are committed to operating safely, 31 percent of the transit system is not in a state of good repair -- a percentage projected to grow without significant increases in capital funding.[14] Current funding levels often force the agencies to make difficult choices in the face of annual budget limitations, including to allow degradation of some assets' condition. While transit operators have successfully and efficiently maintained basic service levels in this environment for some time, the transit system's condition is degrading as the repair backlog grows, posing a long-term threat to service quality and reliability.

Transit agencies are also facing increased competition for riders from emerging private sector mobility providers, particularly Transportation Network Companies (TNCs) like Uber and Lyft that provide on-demand, door-to-door services at prices and speeds that make them attractive alternatives to transit. The mobility innovations could make it easier for people to be less dependent on owning and driving their own cars and help solve the challenge of providing transportation options in less dense suburban areas that are currently difficult and expensive to serve with traditional transit. However, if left unchecked, these innovations could also contribute to increased congestion, slower bus speeds, declines in transit ridership, and decreased service quality. These services also depend on transit to provide a complete network of options.

[10] "Transit Trends."

[11] "Transit Trends."

[12] "Transit Trends."

[13] "Transit Trends."

[14] "Transit Trends."

To be competitive, transit must provide fast, frequent, reliable, and affordable service that connects people to important destinations. Surveys of the region's riders and a growing body of transportation research show that the basics of transit service -- speed, frequency, reliability -- are the most important factors in promoting ridership and customer satisfaction.[15],[16] This finding offers clear focus for the limited dollars available to improve the region's transit system. Investments that improve the speed and reliability of bus transit, such as dedicated lanes and transit signal priority, are particularly cost effective ways to improve transit service. On the rail system, addressing bottlenecks and capacity constraints on high ridership routes can improve reliability and allow more frequent service. ON TO 2050 sets targets for additional miles of roadway and number of traffic signals with transit priority [link to indicator].

To improve service and increase ridership requires regional action by not just the transit agencies, but also municipalities, highway agencies, and funding authorities. Transit agencies cannot sustain fast, frequent, reliable service without accompanying supportive land use changes. Effective transit service results from a combination of strategic investment in transit service and coordinated land use planning. Locating jobs and residences near transit has a powerful positive effect on ridership. CMAP analysis shows that taking steps to increase employment density near transit stations and pricing parking would have more impact on ridership compared to many other strategies for capital investment and service expansion.[17]

[Graphic: Gain in mode share at low and high levels of strategy implementation (source: CMAP Transit Ridership Growth Study)]

The combination of historical development patterns and continued suburbanization of housing and employment in recent decades have created a mismatch between locations with high transit availability and those with high employment densities. As shown below, many suburban areas act as employment nodes but may have limited transit. Many neighborhoods with high concentrations of low income residents have strong access to transit but may have few jobs nearby. This dynamic limits economic opportunity for people who depend on transit to get to work and must access jobs outside of the region's core.

[Graphic: Transit availability and employment density local strategy map, population and jobs with at least moderately high transit availability indicator]

Places with high transit availability but low density can better support transit through targeted infill development. In some cases, these areas have experienced long-term job and population losses. (The ON TO 2050 Land Use chapter offers a set of solutions for disinvested areas.) Places

[15] "2016 Customer Satisfaction Survey" (Regional Transportation Authority, June 2017), http://www.rtachicago.org/index.php/plans-programs/performance-measures/2016-customer-satisfaction-survey.html.

[16] "Who's On Board 2016: What Today's Riders Teach Us About Transit That Works" (TransitCenter, 2016), http://transitcenter.org/publications/whos-on-board-2016/.

[17] "Invest in Transit: The 2018-2023 Regional Transit Strategic Plan" (Regional Transportation Authority, January 2018), http://www.rtachicago.org/index.php/plans-programs/regional-transit-strategic-plan.html.

with high transit availability and high density are good candidates for targeted investments to eliminate bottlenecks and improve the speed and reliability of bus transit. Employment centers with limited transit availability should be evaluated for potential additional services, especially to connect these centers with economically disconnected communities.

Changing demographics and emerging technologies create opportunities and challenges for the region's transit system. Suburban areas, particularly in Cook County, have seen more population and employment growth than the rest of the region. Much of this growth is in demographic categories that tend to have higher rates of transit use, including groups that do not own cars or own only one car, low income residents, Asians, African Americans, and younger adults. The older adults group is also growing: While less likely to ride transit than younger demographic groups, they do become more dependent on being driven to destinations as they age. Paratransit provides a critical mobility link for more than four million trips per year taken by people who cannot use a fixed-route service. Its growth is faster than any other transit service and will accelerate as the region's population ages. However, paratransit can be 10 times more expensive to provide than fixed-route service, while statute limits fares to double that of fixed-route fares. This preserves affordability but may degrade the long term sustainability of these services. The region must balance transit investments in growing areas where transit capacity is limited but demand is increasing as opposed to areas where population is declining but residents rely heavily on transit to commute.

Diversify and increase transit funding sources

The region's transit system faces a $19 billion backlog simply to reach a state of good repair.[18] If supported by diverse and sustainable sources of state, federal, and local funding, transit agencies would be empowered to improve the system's state of good repair, modernize and enhance the system, support low income riders, and confidently move forward with high-priority projects. The need to increase revenue for the transportation system more broadly is central to the financial recommendations of ON TO 2050. Unless structured carefully, many revenue options under consideration have the potential to provide significantly more revenue for roads than transit. New revenues should provide substantive benefit for the transit system and help the region achieve a well-integrated multimodal system. For example, automobile user fees should be used flexibly to improve the region's transit, bicycle, and pedestrian infrastructure. *See the recommendation to fully fund the region's transportation system for more information.*

Invest in and protect transit's core strengths

The region's transit agencies should focus limited funding for expansion and enhancement on projects that build on transit's key strengths: frequent, fast, reliable service that makes connections in areas of moderate and high density. Transit can serve these markets and trips more efficiently and effectively than any other mode. The RTA has identified six key transit

[18] "Invest in Transit: The 2018-2023 Regional Transit Strategic Plan."

markets that enable the region to build upon existing transit assets, and these markets should be the focus of coordinated planning and investment by the transit agencies, IDOT, Tollway, CMAP, counties and municipalities.

Focusing investment will mean different things for different transit modes. On the rail system, it often means addressing capacity constraints that limit the speed and frequency of trains on high ridership routes. These capacity constraints are often operational and relatively invisible to riders, such as lack of space at railyards and maintenance facilities, track junctions, and old signal systems. Bus service can be improved quickly and at relatively low cost; replacing traffic signals and implementing transit signal priority are cost-effective investments that can substantially speed up service on arterial routes. In key corridors with high ridership or plans for supportive land use, the combination of transit signal priority, dedicated right of way, and improved boarding strategies can substantially reduce travel times. The region should move forward on implementing planned ART routes and planning future bus system improvements.

Given transit's importance as the backbone of a multimodal transportation system, it is also important to implement policies that help bolster transit's core strengths and prevent degradation of transit service on high frequency corridors through dense parts of the region. These policies could include new rules or regulations on private mobility services.

> *The region* should move forward on implementing the highest performing planned *Pace* Pulse routes, and *CTA* should commit to implementing a BRT network.
>
> *CTA and Metra* should prioritize addressing capacity constraints on high ridership rail lines and better serving areas of high potential within the existing rail network.
>
> *CMAP and RTA* should collaborate to establish regional TNC policy guidance, and the *transit agencies and local municipalities* should implement recommended policies

Ensure equitable transit access

Focusing on the most productive elements of the transit system has the potential to leave low income riders behind. Providing equal, affordable, accessible service to most people -- particularly those who are low income, car-less, or with limited mobility -- has historically been part of public transit's mission. Yet transit ridership and revenue have been decreasing as commute patterns have changed and private services compete for riders. All transit agencies are required by Title VI of the Civil Rights Act to consider the impact of service and fare changes on minority populations and avoid disparate impacts based on race, color, or national origin. The region's transit providers are committed to delivering equitable and accessible transportation services. These providers face difficult tradeoffs in ensuring efficient, reliable service while serving a diverse set of transit markets, particularly in an environment of declining revenue. Reallocating scarce resources will require thoughtful, transparent, ongoing study. It is critical that these decisions include substantial community involvement and prioritize increasing

affordable mobility options for low income residents and those without access to private vehicles.

New transportation technologies and the increased ability to provide flexible, on-demand services can offer new transit or vehicle sharing options for low-income areas. Low-income earners and people of color have longer-than-average commutes, and despite typically living in areas with good access to transit, they often travel to job centers with limited transit access. Policies to support equitable access must be complemented by strategies to promote coordination across public agencies, reinvestment in existing communities, and production of affordable housing near transit.[19]

> *Transit agencies* should balance tradeoffs between achieving service efficiency and providing high quality service to low income areas.
>
> *Transit agencies* should expand policies to minimize the impact of increased fares on low income residents and the social service providers that assist them.
>
> *Transit agencies, local communities, and the private sector* should work together to explore new ways to provide targeted, flexible and/or on-demand service in EDAs.

Plan for transit-supportive land uses

Many of the most important factors for transit success lie outside the direct control of transit agencies. Policies governing funding, land use, and roadways are all in the hands of other government bodies. Linking transit, housing, and land use was a focus of GO TO 2040 and continues to be an important part of ON TO 2050. Planning for the complex, interrelated nature of these issues can bring many quality of life and economic benefits to the region. Yet, as highlighted in the Infill and TOD Snapshot, such linkages are only being created sporadically, which then has a subsequent effect on ridership. As identified in the Transit Ridership Growth Study,[20] the region is not on track to meet GO TO 2040 goals for increased public transit use. Placing housing and employment near transit can increase ridership and potentially allow better transit service over time.

Given these trends, municipalities in the region need to plan for transit-supportive land uses, thereby leveraging existing transit service while also setting the stage for future system expansions or service level increases. Communities should particularly support the development of employment-rich land uses near current or planned transit corridors, as the Transit Ridership Growth Study found that such uses are more effective at driving ridership increases. Technical assistance resources have been and will continue to be available to municipalities to help planning for transit-supportive land uses through both CMAP's LTA

[19] "Transit Trends."

[20] Chicago Metropolitan Agency for Planning. *Transit Ridership Growth Study*. 2017

program and through RTA's Community Planning program. Metra can also play a role through TOD-supportive parking policies. Planning for transit-supportive land uses must also involve enhancing pedestrian and bike connections to transit, thereby making it easier and more desirable for employees and residents near transit corridors to walk or bike to transit stations.

This strategy will also appear in the Land Use chapter

> *Municipalities, CMAP, and Metra* should analyze parking utilization and supply at adjacent transit stations to evaluate the potential for alternative land uses and parking allotments to support TOD.
>
> *Municipalities* should update plans, zoning codes, and development review processes to require greater densities and mixed uses near rail and bus transit, with a preference toward employment rich land uses, and attend to urban design issues that affect transit efficiency.
>
> *Municipalities* should structure street, pedestrian, and bike networks to support future density where desired.
>
> *Municipalities* should price on-street parking to manage demand in dense areas.
>
> *Municipalities* should prioritize capital projects that enhance pedestrian and bicycle access to transit stations.
>
> *CMAP and partners* should prioritize limited federal funding sources such as CMAQ, TAP, and STP toward jurisdictions that actively plan for densities to support transit service.

Actively manage parking

The amount and location of parking influences the character, form, function, and flow of our communities. Too much or poorly designed parking can make walking and bicycling unpleasant and unsafe, add to flooding and pollution problems, and make housing more expensive. At the same time, in many places, parking is necessary to support local businesses. Planning for parking needs and pricing parking to manage demand can support business needs, raise local revenues, and help create compact, walkable communities. Configuring parking appropriately can promote walkability and access. All-day parking for employees, commuters, or residents can compete with the short turnaround spaces needed for many retail, restaurants, and services. Communities may choose to reconfigure existing parking to meet these varying needs.

Recognizing the importance of these issues, CMAP developed a *Parking Strategies to Support Livable Communities Toolkit* that encourages communities to consider a wide array of solutions.[21] Valuable interventions include pricing on-street parking to manage demand in dense areas, reducing or eliminating minimum parking requirements, and setting maximum parking limitations in some locations. Through the LTA program, CMAP has also helped Berwyn, Hinsdale, and Wicker Park-Bucktown develop plans to identify and implement the right parking management practices for their neighborhoods.

This strategy will also appear in the Land Use chapter

> *Municipalities* should require parking structures to be designed to facilitate future conversion to other uses.
>
> *Municipalities* should reduce or eliminate minimum parking requirements or set maximum parking limitations in some locations.
>
> *Municipalities* should price on-street parking to manage demand in dense areas.
>
> *CMAP* should prioritize parking studies in the LTA program.

Road agencies should prioritize improving transit service

Improvements to bus transit require the active engagement of roadway agencies. While these agencies are sometimes cautious to adopt transit-oriented roadway improvements such as queue jumps and transit signal priority (TSP), these strategies have proven successful in other regions. Pilots and demonstration projects are critical for the region to educate roadway agencies about the opportunities for improving transit. Transit and highway agencies can also build on the success of Pace bus-on-shoulder on I-55 to offer additional routes and continue to provide innovative bus service options.

> *Road agencies* should place more emphasis on investments that improve transit service, including transit signal priority, queue jumps, and dedicated expressway right-of-way for transit vehicles.
>
> *IDOT* should review and revise its design manuals and permitting processes to facilitate bicycle, pedestrian, and transit improvements wherever possible.
>
> *Road agencies* should involve transit agencies in early stages of project planning.

[21] Chicago Metropolitan Agency for Planning, "Parking strategies to support livable communities," 2012, http://www.cmap.illinois.gov/documents/10180/96911/StepByStep3.pdf/39fa6452-2e19-4691-87bd-abac8b06c248.

Road agencies should include design treatments in expressway and arterial projects to better accommodate transit users and make service faster and more reliable.

IDOT and the Tollway should identify ways to leverage toll revenue to pursue multimodal transportation system goals such as providing high-speed, high-reliability transit service in expressway corridors.

Make further progress in fare and service coordination

Fare coordination has improved in recent years through the Ventra system, which provides a platform for additional collaboration. With the ongoing expansion to Divvy and ADA Paratransit, Ventra is taking an important step beyond core transit services. More work can and should be done to further technological and fare integration across agencies, while remaining accessible to the unbanked and others of limited means.

Transit agencies should leverage the capabilities of Ventra, continuing to provide and improve seamless payment for multiple transit providers and other modes such as bike sharing.

Transit agencies should coordinate transfers, reduced fares, and payment between their services and with other modes of transportation.

Transit agencies should continue to review and revise overlapping service.

Improve the efficiency and effectiveness of paratransit and demand response service

Pace oversees several demand response programs, including paratransit service, which is available to riders whose disability or health conditions prevent them from using fixed route services; Dial-a-Ride, which is typically limited based on a person's abilities, age, and/or income; and Call-n-Ride, which is typically provided within a certain geography, such as a township or municipality. While ridership data is limited for Dial-a-Ride and Call-n-Ride services, since 2000, ADA paratransit service in our region has grown dramatically in response to intensifying demand and likely will continue to grow as the population ages. Despite increasing use, the network of services can be complex for users to navigate and presents unique financial challenges for operators. While some people in the region rely on dial-a-ride to get around, it has numerous limitations. Containing service areas within municipal or township borders does not align with how people travel in a metropolitan area. Often, weekend, early-morning (before 9:00 a.m.), and evening (after 6:00 p.m.) services are minimal or nonexistent. Some services are limited to medical appointments or take passengers only to specific locations such as parks. Same-day travel requests typically are not accommodated.

McHenry County Department of Transportation has taken a leadership role in recent years by leading the consolidation of various dial-a-ride services into a single service, called MCRide,

which not only serves persons with limited mobility but also provides on-demand transportation in an area with limited fixed route transit services.

While paratransit service will continue to be critical for many people, making fixed-route transit more accessible continues to be a priority. All buses in the region are ADA accessible, although the immediate surroundings of many bus stops in the region are not. Likewise, all trains are accessible, but many train stations are not. The CTA is committed to making all rail stations accessible over the next 20 years as part of its All Stations Accessibility Program.

> *Transit agencies* should continue to make progress toward universal accessibility of stations.
>
> *With RTA and Pace, counties* should continue to help coordinate and, as appropriate, consolidate demand response services within their borders.

Maintain the region's status as North America's freight hub

By almost any measure, metropolitan Chicago is the nation's premier freight hub. Approximately 25 percent of all freight trains and 50 percent of all intermodal trains in the U.S. pass through metropolitan Chicago, which serves as the continent's main interchange point between western and eastern railroads. Trucks account for about one in seven vehicles on the urban Interstate highways in Illinois, and some facilities in metropolitan Chicago carry over 30,000 trucks each day. The region is also home to one of the nation's largest and fastest-growing air-cargo hubs and has access to both the Great Lakes and Mississippi River maritime systems. Our region is one of the nation's largest industrial markets, with approximately 1.1 billion square feet of industrial development supporting freight and manufacturing activity. Industries that rely on the frequent shipment of goods -- manufacturing, construction, retail trade, and wholesale trade -- collectively represent over one-quarter of all jobs in the region and add over $158 billion per year to the regional economy. Yet freight transportation is changing. Shortened supply chains and increased online shopping are changing national and local goods movement strategies. The region must adapt to these changes while protecting quality of life and limiting public costs.

[graphic: Metropolitan Chicago freight assets (source: freight snapshot)]

This massive concentration of freight activity in northeastern Illinois provides a competitive advantage that helps to drive the regional economy. A robust freight network also ensures that residents and businesses get the goods they need in a timely manner. However, freight activity raises significant infrastructure challenges, including congestion on road and rail networks, as well as regulatory challenges related to truck operations and local land uses. Together, these challenges affect communities' quality of life. For example, congestion results in increased emissions, affecting local air quality and health for local communities. CMAP estimates that weekday motorist delay at the region's grade crossings cost residents $58 million annually in

2017. The ON TO 2050 target for motorist delay at highway-rail grade crossings is 6,000 hours per weekday, down from 7,511 hours in 2017 [Link to plan indicator].

[Map: Chicago Region freight system]

With its unparalleled access to transportation facilities, the Chicago region is one of the nation's preeminent hubs for intermodal freight -- the movement of containerized cargo via multiple transport methods such as rail, trucks, planes, and ships. Over 7.8 million freight cargo containers originated or terminated here in 2016, or nearly 16.3 million "twenty-foot equivalent units" (TEUs), making our region the largest point of origin and termination for intermodal shipments in the U.S., outpacing other large freight hubs such as the Los Angeles, New York, and Seattle metropolitan areas. ON TO 2050 sets a target of reducing Chicago terminal carload transit time [link to plan indicator].

The growth of same-day shipping, online shopping, and faster, cost optimized supply chain management -- all enabled by new data processing and communications technology -- has pushed growth of intermodal facilities here and nationwide. But the region must find ways to support these facilities while constraining the negative impacts of increased truck and rail traffic, protecting key natural assets, and limiting the rapid, unaffordable expansion of infrastructure.

The region's truck network supports delivery of goods, movement between local freight and manufacturing centers, connection to intermodal networks, and movement to other parts of North America. Truck traffic in the region is growing due to consumer shopping trends. While ON TO 2050's list of Regionally Significant Projects identifies infrastructure improvements that benefit truck movement, there is great potential to improve the efficiency of the truck system through operational improvements. Implementing holistic strategies to smooth truck travel can reduce costs for shippers and address concerns such as local congestion, wear and tear, safety, and quality of life.

[graphic: freight land use clusters local strategy map and truck bottlenecks local strategy map]

Effective planning for the region's freight system must involve collaboration across the public and private sectors while carefully balancing economic, livability, and infrastructure funding concerns. Freight helps the region's economy grow and helps our residents get everything from coffee to shoes; freight facilities create direct employment and also support jobs in many related industries. Freight activity also creates congestion, noise, safety, and air quality concerns. While the region's communities have often actively courted new freight development, the scale and wages of resulting jobs have not always met expectations. Although the region's counties and transportation stakeholders have recently come together to improve truck permitting, they must pursue more collaborative action on funding, policy, and project development to truly support our freight network. Existing partnerships, like The Chicago Region Environmental and

Transportation Efficiency program (CREATE), have made substantive progress, but renewed efforts are needed to fully realize public benefits.

The following outlines strategies and associated actions to implement this recommendation.

Invest strategically in the freight network

The region's status as a freight hub with an extensive existing network requires coordinated investment. The Chicago Region Environmental and Transportation Efficiency program (CREATE) is a public-private partnership between freight railroads, U.S. DOT, IDOT, the City of Chicago, Metra, and Amtrak.[22] While public and private investment in CREATE has greatly improved rail movement in the region and nationwide, the effort requires continued investment with a focus on public benefits. See the *Build Regionally Significant Projects* recommendation for more information.

In addition to freight rail projects, the region must also prioritize its roadway investments and foster new partnerships to support truck movements. Addressing the region's truck bottlenecks provides one option to reduce truck and auto congestion. The region may also need to explore new solutions for facilities that experience a high volume of truck traffic. Any infrastructure investment should be complemented by policy shifts on routing and permitting that make full use of the existing system.

The CREATE partners should complete the 75th St. CIP and then complete the remaining projects in the program.

Private rail partners should provide substantive documentation of and data supporting the public benefits of future CREATE projects.

CMAP and highway agencies should prioritize among the region's rail grade crossings and direct funds for improvement, along with study of feasibility and alternatives to separation.

CMAP and highway agencies should address truck bottlenecks in future improvements.

CMAP and highway agencies should explore truck lanes, truck only routes, and other options to aid goods movement and reduce conflicts on the region's expressway network.

[22] "CREATE program status check," CMAP, February 20, 2015, http://cmap.is/1JCKVha.

Develop a unified regional approach for freight transportation issues

Our region's freight network depends on careful, well-funded investment to ensure economic prosperity here and nationally. Coordinating regional action to obtain and prioritize new federal dollars for freight infrastructure is especially critical. CMAP and its partners have developed a strong regional voice on freight, working to address truck permitting issues, advocating for federal funds, and building coalitions to implement major projects such as the 75th St. CIP. CMAP and its partners should continue this momentum to change federal, state, and local policies and support coordinated investment in the region's freight network.

In 2017, CMAP's Regional Strategic Freight Direction established a programming framework to define the best use of limited capital funds for freight.[23] It is especially timely given the growing federal and state emphasis on freight infrastructure needs. Enacted in late 2015, the current federal transportation law, the Fixing America's Surface Transportation (FAST) Act, provides the first-ever dedicated funding for freight improvements.[24] This program is currently referred to by the U.S. DOT as the Infrastructure for Rebuilding America (INFRA) program, and it and other competitive federal programs offer significant resources to support large, complex projects with broad impact on speeds and volumes of goods movement. Regional consensus and action have the potential to attract broader investment; the U.S. DOT looks favorably on projects with broad regional support, and by limiting the number of proposals submitted by metropolitan Chicago and Illinois, our region and state can increase the likelihood of success.

> *CMAP and partners* should pursue stable and sustainable funding for the region's freight network.
>
> *IDOT and partners* should establish principles for the use of federal freight funds.
>
> *CMAP and partners* should create a process to develop, coordinate, and prioritize responses to federal freight funding opportunities such as INFRA.
>
> *IDOT* should use performance-based programming for freight formula funding sources such as the National Highway Freight Program.

Focus on improving local and regional truck travel

Freight has regional and local transportation, land use, and economic impacts. One clear opportunity is to improve truck routing through the region. While state law allows local governments to designate truck routes or determine preferred truck routes, many communities

[23] Chicago Metropolitan Agency for Planning, "Regional Strategic Freight Direction" (CMAP, February 2018), http://www.cmap.illinois.gov/documents/10180/826017/FINAL+Regional+Strategic+Freight+Direction+with+cover_2-6-18.pdf/88a957e1-249b-4b54-d093-f53b144ee102.

[24] "Congress passes transportation reauthorization bill," CMAP, December 4, 2015, http://cmap.is/1lBWD16.

instead designate only where trucks *cannot* go.[25] Local restrictions based on truck type, weight, and dimensions often change at jurisdictional borders, adding complexity to routes, prompting trucks to make turns and diversions to alternate routes when moving between municipalities. Drivers must individually verify each jurisdiction's truck restrictions, as these local restrictions are not reported to a centralized public or private database. Although intended to limit noise, wear and tear, and other negative impacts of truck traffic, communities' restrictions can in fact exacerbate such problems due to inconsistency and lack of coordination.

Working across jurisdictions can help maintain the Chicago region's national freight stature while mitigating negative impacts and maximizing benefits for communities. Despite our region's formidable overall freight profile, most activity tends to occur in a relatively small number of locations linked by the regionwide transportation network.[26] Freight-intensive land uses tend to co-locate for efficiencies of shared infrastructure and workforce.[27],[28] Through their collaboration on economic growth initiatives, leaders of the seven counties in northeastern Illinois and the City of Chicago have identified truck permitting as a key opportunity for inter-jurisdictional cooperation. These regional leaders completed the Regional Truck Permitting Study,[29] funded by numerous partners including the counties, the City of Chicago, IDOT, and CMAP. Local restrictions represent another opportunity. Oversize and overweight permitting must be complemented by streamlined local routes that support movement of regularly loaded trucks. A recent LTA project in the O'Hare subregion offers one example of working across jurisdictions to create consistent truck routes, limiting truck traffic in residential and sensitive areas while still providing connected and consistent routes.[30]

> *Local governments* should work with businesses to implement policies that improve delivery management in urban areas, including encouraging off-hours deliveries.

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[25] There are three primary classes of truck routes in Illinois: Class I, Class II, and Locally Preferred Truck Routes. Class I and Class II truck routes are associated with certain restrictions on the size and weight of trucks, allowing access to trucks with 53' trailers or containers. Class I truck routes generally consist of the expressway system, but also have the effect of permitting truck access to streets within a mile of an expressway interchange (unless otherwise restricted). Class II routes include major state highways as well as local roads that have been designated by local ordinance as a truck route. Finally, Locally Preferred Truck Routes include only truck routes administratively identified by local governments and are not considered a designated truck route; they have no effect on permitted truck size and weight. Illinois also has Class III truck routes, but the legal effect of these has been made mostly moot by recent legislation increasing legal loads to 80,000 pounds (PA 96-0034 and PA 96-0037).

[26] "Freight Land Use Clusters in Northeastern Illinois," *CMAP*, accessed March 29, 2018, http://www.cmap.illinois.gov/updates/all/-/asset_publisher/UIMfSLnFfMB6/content/freight-land-use-clusters-in-northeastern-illinois.

[27] "Memorandum: Freight Land Use Topics" (CMAP, May 16, 2016), http://www.cmap.illinois.gov/documents/10180/541045/Freight+Committee_freight_land_use.pdf/dd64eef8-1ce4-43eb-9b60-855853fe1fba.

[28] "Memorandum: Local Approaches to Freight Planning in Metropolitan Chicago" (CMAP, December 4, 2017), http://www.cmap.illinois.gov/documents/10180/787934/Freight+Committee_local+freight+plans_20170918.pdf/e0746a65-5144-1ee2-f9d1-07afb8af672b.

[29] "Regional Truck Permitting Plan," CMAP, http://www.cmap.illinois.gov/programs-and-resources/lta/regional-truck-permitting.

[30] Link to O'hare study

Local governments should take a proactive approach to designating truck routes and reevaluating truck restrictions.

IDOT should review truck-route designations for state-jurisdiction highways to provide a well-developed backbone of Class I and II truck routes that local governments can incorporate into their planning efforts.

Counties and local government should coordinate oversize/overweight permitting across jurisdictions and ensure they are consistent with the state permitting process.

The state and counties should provide easier access to information on truck routing and restrictions as well as oversize and overweight permitting processes.

CMAP should study the transportation and land use impacts of emerging freight distribution strategies to develop policies, data, and best practices for addressing these impacts.

CMAP and transportation providers should collaborate with O'Hare, Midway, and the Port of Chicago to facilitate surface transportation access to and supportive land use planning around these facilities.

Mitigate the negative impacts of freight on adjacent areas, particularly economically disconnected areas

While providing broad economic benefits, freight activity can have adverse impacts on communities. Truck and rail traffic can cause noise, congestion, air quality, and other negative impacts. Trucks cause heavy wear and tear on locally maintained roads, and at-grade rail crossings can cause delays for motorists as well as difficulty in routing emergency services. Many freight and industrial facilities also generate low returns from the property taxes and other fees that municipalities can enact, creating a gap between the cost to provide supportive infrastructure or services and the revenues generated. These cumulative factors often make freight a locally unwanted land use.

The negative impacts of freight activities are of particular concern in EDAs, which have large concentrations in major freight activity centers such as the O'Hare area, the south and west sides of Chicago, the south Cook suburbs, and the Joliet area in Will County. The close correspondence of freight activity centers and EDAs is perhaps unsurprising. The result is often lower property values for neighboring residential areas, which in turn are more affordable to low-income populations. There are many potential environmental justice concerns related to goods movement. In practice, responding to these concerns should be a project- and community-specific effort that actively engages residents and responds to local needs.

CMAP and partners should continue to identify and provide solutions for mitigating the negative impacts of freight developments and infrastructure.

CMAP, highway agencies, municipalities, and other partners should balance quality of life concerns with economic impacts when investing in freight development and infrastructure.

Transportation agencies should consider additional outreach, analysis, and mitigation activities for freight-related improvements in economically disconnected areas.

CMAP and transportation implementers can prioritize projects that improve quality of life, such as reducing truck bottlenecks and separating at-grade rail crossings that cause high levels of delay.

CMAP should give additional weight in the CMAQ, TAP, and STP programs to road and rail projects that address freight-related environmental justice issues.

Assess the local and regional impacts of proposed major freight facilities

Goods movement infrastructure has far-reaching impacts on other modes of transportation, development patterns, local and regional economies, local quality of life, and the environment, so proposed new facilities generate numerous planning questions. While many types of freight development or infrastructure are being developed throughout the region, "major freight facilities" are sufficiently large to affect many jurisdictions, including developments such as large intermodal truck-rail facilities, sizeable new rail facilities, mergers and acquisitions among Class I railroads, and major new airport and seaport facilities. These facilities can generate significant amounts of truck and rail traffic, induce major real estate developments, and require significant new public investments in supportive infrastructure. While a single local, state, or federal entity may be responsible for permitting a proposed facility, proposals that affect many neighboring and overlapping jurisdictions must be evaluated for their broader impacts. The Regional Strategic Freight Direction includes principles to guide evaluation of major freight facility proposals. Although CMAP has no authority over local land use, federal decisions on railroad mergers, and similar initiatives, the agency can leverage its analytical and planning strengths to aid planning and implementation for major freight facilities.

CMAP should analyze new freight facilities to assess their regional impacts.

Municipalities should collaborate with *CMAP, IDOT, adjacent jurisdictions*, and other partners when reviewing the needs, benefits, and impacts of large new freight developments.

CMAP should support *municipalities* in incorporating the major freight facility principles into their planning and development decisions.

Municipalities, IDOT, private railroads, developers, and others partners should collaborate with affected jurisdictions to assess the needs for and impact of major freight facilities.

A system that works better for everyone

Improving safety, resilience, and equitable access to the transportation system has long been a focus of transportation planning. Transportation implementers have made progress in collaborating across jurisdictions to ensure better results both locally and regionally, but only through concerted, coordinated effort can we holistically improve the transportation system for all users. There is a particular need to focus on the intersections between bicycle and pedestrian safety, access to economic opportunity for low income and minority residents, and the adaptations necessary to respond to a changing climate. CMAP and its partners should emphasize these factors in making decisions about the transportation infrastructure that is central to economic prosperity and quality of life across all seven counties and 284 municipalities of metropolitan Chicago.

Leverage the transportation network to promote inclusive growth

In metropolitan Chicago, African American and Hispanic residents experience persistent disparities in employment, health, educational attainment, and income. These negative outcomes are worst for African American residents, who also endure longer commutes than residents of other races or ethnicities. These residents are often transit-dependent, yet many must commute to jobs located far from frequent transit service. At the same time, they have limited employment opportunities within their own communities.

Analysis shows that high levels of economic inequality are limiting our region's ability to grow. Long-term regional economic prosperity requires that we address these issues and take action to increase opportunity and improve quality of life for all residents. Transportation can play a role in creating pathways to opportunity for low income communities and people of color. Working with stakeholders, CMAP has identified Economically Disconnected Areas (EDAs) to focus planning efforts and policy recommendations. Many residents of EDAs have limited options for transportation that would efficiently connect them to economic and other opportunities. This is particularly true for residents living in EDAs in the city of Chicago, where access to transit options does not always ensure access to jobs within a reasonable travel time. CMAP research shows that just 9 percent of residents in south and west side Chicago EDAs are employed nearby, compared to the economically connected areas of the city where 72 percent of residents live near their jobs.

[Indicator: commute time by race and ethnicity]

Low income residents in the Chicago region use all modes of transportation to get around and are more likely to use active modes of transportation to get around than higher income residents. It is especially important to ensure equitable access to safe bicycle and pedestrian facilities for low income residents.

[Graphic: Mode share by worker earnings, CMAP region]

Meaningful progress toward achieving increased access to opportunity can only happen with intentional coordination among public and private actors to leverage technology, improve outreach and engagement, and direct transportation investments where they can have needed impacts.

The following outlines strategies and associated actions to implement this recommendation.

Increase authentic, responsive engagement of underrepresented communities in planning and development

The state of the practice for outreach and engagement in transportation planning and programming processes has advanced significantly beyond 30-day public comment periods, one-time public hearings held in government offices, and public notices posted only in newspapers and on public bulletin boards. Technology has enabled new pathways for residents to connect with the people responsible for the transportation system, but many people continue to experience barriers to productively engaging with the public planning processes.

The demographics of those engaged in planning processes may not necessarily reflect the demographics of the affected community; also, low income communities, people of color, and immigrants have valid and historic reasons to limit their exposure to government. And while the digital divide has narrowed in recent years, some populations continue to have inadequate Internet access. Therefore, it is increasingly important that CMAP and other transportation agencies raise the standard for public engagement. Practices to emphasize include targeting and tracking outreach efforts to measure progress toward reflecting community demographics; exploring and deploying new outreach methods specifically designed to increase participation among low-income communities, people of color, and immigrants; and allowing for more localized ownership of the planning process. CMAP can leverage its role as a convener to collaboratively develop and disseminate improved practices in the region.

Build capacity for disinvested communities to develop, fund, and maintain transportation infrastructure

Some parts of the region were left behind by growth over the many decades, often having lost substantial population, jobs, businesses, and resources. Promoting growth in these areas will require collaborative and comprehensive investment at all levels of government and civic organizations. Disinvested areas fully encompass the Economically Disconnected Areas defined

within ON TO 2050, while also including adjacent commercial and industrial areas that have experienced a loss of economic activity over sustained periods of time.

The local governments that serve disinvested areas tend to have lower staff and technical resources, due to lower tax bases and fewer financial resources available. This impairs their ability to maintain existing infrastructure and to access regional and federal transportation resources for reconstruction and improvement projects. Accessing these public resources requires not only matching local funds, but also significant and costly predevelopment investments such as feasibility studies and engineering, which may make projects infeasible for some low capacity municipalities. These communities also tend to have higher concentrations of low-income households and people of color, further increasing disparities in transportation infrastructure.

> *Transportation funders* should develop creative approaches to removing the financial barriers that prevent disinvested areas from accessing some transportation funding programs.
>
> *CMAP and partners* should develop materials and trainings to help municipalities understand how their land use choices affect local revenues.
>
> To overcome a lack of data and technical capacity to implement asset management, *CMAP and partners* should assist with transportation data collection and asset management pilot projects, eventually expanding to a region-wide program.
>
> *CMAP* should research best practices and leverage its growing resources on age and condition of the region's infrastructure to develop methods for municipalities to assess mid- and long-term impacts of major or cumulative development processes.

Improve commute options between disinvested areas and employment, education and training, and service opportunities

While investing in frequent service on high ridership corridors, transportation agencies must also find ways to improve mobility for low income residents and communities in areas with limited transit service or travel needs that are not well served by traditional transit options. Shared mobility and automated vehicle technologies have the potential to provide more frequent and direct service in low income neighborhoods, improving connections to jobs that may currently require long transit trips or connecting multiple modes. In some cases, the most effective mode of travel may be a personal automobile, and transportation implementers should consider ways to ensure equitable access to tolled facilities. For example, The Illinois Tollway developed I-PASS Assist to assist income-eligible to easily and affordably obtain an I-PASS. I-PASS Assist works like a standard I-PASS account, but allows eligible drivers to purchase at a discount of $20. CMAP can play a role in identifying gaps in the transportation system for economically disconnected communities, and work with public transit agencies and private sector partners to identify solutions.

Transit agencies should work with local communities and the private sector to develop pilot projects that explore new methods of providing targeted, flexible and/or on-demand services that connect EDAs to suburban job centers and other destinations.

CMAP should take a leadership role to identify gaps in the transportation system for economically disconnected communities, articulating the individual, local, and regional growth benefits of better transportation connections.

IDOT and the Tollway should implement policies that ensure equitable access to tolled facilities, such as "lifeline credits" that make a certain amount of toll credits available each month for lower-income drivers.

Improve access to public rights of way for pedestrians, cyclists, and people with disabilities

People who rely on walking, bicycling, or wheelchairs need accessible pathways. Especially in suburban areas, low income residents are more likely to rely on low-cost modes than higher income residents to reach employment, services, and other destinations. When bicycling facilities and sidewalks are in need of repair, are missing, or are not designed for people with disabilities, they limit employment and other options for engagement in the community. Facilities must safely connect these communities to jobs, amenities, and the region's growing bicycle network.

Making sure that public rights of way provide safe pathways for people using active transportation and people with disabilities is an important strategy for inclusive economic growth. While the U.S. Access Board continues to finalize federal Accessibility Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG) as proposed in 2011, U.S. DOT recognizes PROWAG as current best practice that some states have already begun incorporating into their own design manuals and other regulatory documents.

IDOT and local agencies should ensure that sidewalk and bicycling facilities are present and as adequately maintained in low income areas as in more affluent areas.

As part of project evaluation for bike and pedestrian investments, *CMAP and other funding agencies* should measure benefits to low income communities and people of color.

Transit agencies should continue to make progress toward universal accessibility of stations.

Improve travel safety

Perhaps the most fundamental duty of any transportation provider is to protect the safety of those in the public right of way. Traffic deaths are preventable. NHTSA identified driver behavior as a factor in 94 percent of crashes nationally, and in the Chicago region, it is the most often-cited primary cause of fatal and serious injury crashes. The region should embrace a full range of strategies to eliminate all traffic related fatalities by 2050. Strategies that improve safety can also reduce congestion and improve the reliability of the transportation network.

After declining for several decades, traffic fatality rates in the region began creeping upward in 2010 and spiked in 2016. This increase is likely due to a combination of factors, including increased commuting due to a sustained economic recovery, as well as increased use of devices while driving. New vehicle safety technologies -- including crash avoidance, lane keeping, and potentially even fully connected and automated vehicles -- can have a substantive impact on roadway safety. But the recent uptick in fatalities demonstrates the need to continue investing in other safety strategies, including changing roadway design, improving education, and implementing carefully designed enforcement programs.

[Indicator: traffic fatalities]

Communities with safe bicycle and pedestrian facilities that connect residents to desired destinations provide residents with additional options to meet their daily needs. Active modes of transportation represent a growing share of trips to work in the city of Chicago, but there has been a slight decline in suburban areas. Unfortunately, data is not available on other kinds of trips, which often are of shorter distance and more conducive for active transportation. People walking and biking are the most vulnerable users of the transportation network. Crash data suggests that bicycle and pedestrian serious crash rates are increasing faster than those for vehicle occupants. National and statewide analyses also indicate that areas with higher concentrations of people of color, low income, and senior populations have higher serious and fatal crash rates than other areas. According to the National Complete Streets Coalition and Smart Growth America, African Americans in Illinois constitute 14.2 percent of the population and 24.1 percent of pedestrian deaths. Higher speeds increase the likelihood of serious injuries or death, especially in the case of pedestrian and bicycle crashes.

[Graphic: impact of speed on pedestrian fatalities]

Enforcement plays a critical role in changing driver behavior and improving safety. However, enforcement programs need to be designed carefully and with significant community input, particularly in low income and minority communities. The disproportionately high rates of serious injuries and fatalities in these areas must be addressed, as must community concerns about racial profiling, use of force, and disproportionate impacts of traffic fines.

The following outlines strategies and associated actions to implement this recommendation.

Continue to update roadway designs to reduce speeding and crashes

To significantly reduce the number of pedestrian and bicyclist fatalities, CMAP and partners should prioritize areas that would benefit most from improved infrastructure that includes design interventions and reduced speed limits. Such areas may have high crash rates, concentrated destinations, many people walking or biking, and lower rates of vehicle ownership. Innovative road designs can reduce conflicts between turning vehicles and pedestrians. A few roundabouts, access management, and designs to reduce the delay caused by left-turning vehicles have all been constructed in the CMAP region, but their implementation could be broadened, while still assuring that the designs are appropriate for a given site.

Pedestrian countdown signals, better road markings, protected left turn phases, designs that reduce left turn speeds, and traffic calming treatments will all improve the safety of pedestrians at intersections. Engineering can also make driving safer for older drivers, who are anticipated to be on the roads in larger numbers by 2050. Where appropriate, roadway redesigns or "right-sizing" that decrease vehicle speeds and allocate space to pedestrians and bicyclists can maintain appropriate levels of vehicular throughput while making roads safer for all users. CMAP preliminarily identified road segments in the region that could be candidates for right-sizing. This is a planning-level analysis and more thorough engineering study would be needed before implementation.

CMAP should develop policy guidance to help communities prioritize roads for traffic calming and other safety improvements for cyclists and pedestrians

CMAP should assist low capacity municipalities with implementation of safety improvement and traffic calming projects

Highway agencies should implement alternative intersections and right-sizing, where appropriate, to reduce turning conflicts.

Invest in safe bike and pedestrian pathways to desired destinations

Walkable communities and safe, connected networks for bicycling can reduce the number of automobile trips, reduce vehicle miles travelled, and improve the overall performance of the transportation system. Although significant progress has been made in building out the regional greenway and trails network, most destinations for shorter, functional trips, such as to work, shopping, and social gatherings, are not accessible by off-street paths alone.

While on-street facilities can put cyclists in conflict with motorists, recent improvements in design and engineering can reduce these conflicts and respect local character. Complete Streets is a transportation policy and design approach that requires streets to be planned, designed, operated, and maintained to enable safe, convenient, and comfortable travel and access for all

anticipated roadway users, regardless of their age, abilities, or mode of travel. Complete Streets can improve quality of life in a variety of ways. The State of Illinois was one of the first states to adopt a Complete Streets policy in 2007, and now 37 governments and agencies in our region have adopted such a policy. CMAP has also developed a Complete Streets Toolkit with guidance for local governments interested in adopting a policy. Many of the region's roadways that could be safest and most attractive to cyclists are also under municipal or county jurisdiction. These local governments should adopt Complete Streets policies as a first step to increasing options for active transportation and making public rights-of-way accessible to all users.

CMAP and partners should implement the Regional Greenways and Trails Plan.

Counties and municipalities should adopt and implement Complete Street policies.

CMAP and IDOT should identify facilities with underutilized roadway space for bicycle and pedestrian infrastructure and/or Complete Streets initiatives.

CMAP and partners should encourage local agencies to engineer and develop on-street bikeways that increase access to functional destinations.

CMAP should prioritize investment in bicycle projects that improve access to functional destinations.

Improve incident detection and management

The region, working with system operators and municipal, county, and state police, should establish a goal and develop strategies to reduce the amount of time roads are closed due to crash investigations. Improving incident management is a high priority because it improves safety and reduces congestion. Some serious highway incidents require hours to clear. Nationwide, approximately 20 percent of all incidents are secondary ones caused by the congestion and disruption of a previous incident.[31] Shortening their duration reduces the potential for additional incidents. Each incident presents an opportunity to reduce congestion through earlier detection and verification, faster response, and adherence to quick clearance principles. Unlike other highway operations activities, incident management is largely managed by a public safety agency, with the transportation agency playing a supporting role. While much of the work to improve performance falls upon the public safety agencies, transportation agencies can also take steps such as implementing automated incident detection methods, either with traffic cameras or real-time GPS probe data. The Jane Addams Memorial Tollway (I-90) has been reconstructed to include flexible infrastructure to enable the Tollway to add new "smart" features, such as roadway cameras that enhance the Tollway's ability to respond to traffic and weather incidents.

[31] "Traffic Incident Management," *Federal Highway Administration's Office of Operations,* April 2004, http://ops.fhwa.dot.gov/aboutus/one_pagers/tim.htm.

IDOT and the Tollway should continue to expand investment in the use of traffic cameras or other sensors with automated incident detection capabilities on the interstates.

Local governments should explore feasibility of real-time probe data and CCTV cameras at critical locations.

IDOT should continue to implement its incident management training for local public safety agency personnel.

Transportation agencies should work with public safety agencies to investigate and implement strategies to improve the clearance time for major incidents.

Expand regional data collection and analysis on safety to support programming decisions

Federal regulations require the MPO to assume a greater role in improving traffic safety. CMAP is required to plan and program transportation funds for meeting safety targets that are set annually by the state DOT and MPO. One way to achieve this is to incorporate safety performance as a higher priority in transportation project selection for federal funds, ensuring that this vital aspect of transportation receives adequate consideration.

To have a data-driven approach to improving traffic safety, crash data needs to be available in a timely manner. Annual state crash data have typically been released about nine months after the end of the year, but recently it has taken longer for IDOT to provide this data to the various agencies that need crash records for their analysis. It can be especially difficult to quickly observe whether safety improvements are working. Three years of data are typically required for analyses, which may take five years to obtain after an improvement. State and regional partners, including CMAP, need to work together to hasten data availability through electronic reporting and improved data definitions and standards.

CMAP and partners should work to develop safety-related improvements and identify funding for implementation.

CMAP should track implementation of state Strategic Highway Safety Plan strategies in the greater Chicago area, identify barriers, and develop methods to address them.

CMAP should more thoroughly incorporate safety benefits in projects for CMAQ, TAP, and STP funding.

Improve driver training and equitable traffic safety enforcement policies

Programs that seek to modify driver behavior through enforcement and education are cost-effective ways to reduce fatalities and serious injuries. Because speeding and aggressive driving are behavioral issues, educational campaigns and driver training should be encouraged

regionally. Automated speed enforcement (ASE) through speed cameras is an effective tool that should be used more widely in the region. A review of ASE programs found fatality reductions of 17 to 71 percent. ASE can free law enforcement personnel to focus on other issues and also limits the danger of escalation from routine traffic stops. Currently, however, only the City of Chicago is authorized under state law to use ASE. IDOT can currently only use ASE in work zones.

Increasing traffic safety enforcement in low income and minority communities is a complex issue that goes well beyond traffic safety. Traffic fines can become a major source of debt and a barrier to employment for low income residents. On the other hand, higher numbers of pedestrian and bicycle crashes occur in low-income, minority communities. A limited, partial solution may be automation, which allows for traffic law enforcement while minimizing additional police interaction. It is critical to have a credible analysis of the equity impacts of the locations and numbers of potential violations from automated enforcement. Enforcement programs should be designed with equity as a crucial element, with the goal of reducing safety disparities in minority and low income communities while also avoiding disproportionate financial burden on these same communities. Funds collected from enforcement in these communities should be directed back into locally identified safety improvements.

> *CMAP* should assist in analyzing the impacts of automated enforcement in the Chicago region.
>
> *The General Assembly* should broaden permissions for IDOT, the Illinois State Police, the Illinois Tollway, and municipal and county agencies to implement automated speed limit enforcement programs, and agencies should work to develop automated enforcement programs.

Improve resilience of the transportation network to weather events and climate change

A resilient transportation network can continue to provide seamless mobility even in the face of a changing climate. Inclement weather is currently estimated to cause 15 percent of congestion, increasing the number of crashes and delays and reducing road capacity. Approximately half of the days in a typical year have weather conditions that affect driving and contribute to road closures, traffic slowdowns, crashes, and damage to electronic devices such as traffic lights, message signs, and cameras. Climate change is already causing more frequent road flooding, snow storms, and heat- and cold-related pavement and communication failures. These capacity and performance issues are only expected to worsen.

As road and transit systems modernize, the same technologies that can improve system safety and reliability can make the system more responsive to weather events. The expansion of intelligent transportation system (ITS) devices and traffic management capabilities will support

a variety of weather-responsive traffic management strategies, such as instituting variable speed limit systems to reduce speeds during inclement weather, coordinating traffic signal timing that reflects the slower speed of travel in corridors during bad weather, employing alternative signal plans to support detours, and increasing coverage of emergency vehicle patrols to remove disabled vehicles more quickly. Existing regional strategies to mitigate impacts include traveler information and alerts, weather advisories, vehicle restrictions such as banning trucks during high winds, road closures for flooding or drifting snow, anti-icing/deicing road surface treatments, plowing, and pumping water from flooded locations.

The following outlines strategies and associated actions to implement this recommendation.

Strengthen transportation infrastructure to withstand current and future weather events

Most of the region's roads were designed using standards that pre-date the increased number of freeze-thaw cycles, heavy rain events, and hotter, wetter conditions posed by the region's changing climate. Transportation modernization efforts should promote infrastructure that is built or retrofitted to revised design standards that take the anticipated climate of the region into account. Identifying locations at risk of flooding and then retrofitting these locations to handle current and future rain events can help maintain regional and local mobility and ensure that investments are built to last. The RTA, IDOT, and several county transportation agencies are already working to identify portions of the existing transportation system that are vulnerable to flooding and incorporating solutions into their long range capital plans or operational response plans. CMAP should also explore how flooding and storm events could affect future investments and whether additional design criteria are needed for regionally significant transportation projects to avoid or reduce flooding vulnerability.

At the local level, municipalities must also address the vulnerability of their streets to flooding and other climate change impacts. Through the LTA program, CMAP could assist communities in vulnerability assessments to help inform capital improvement plans and corresponding design considerations. As new information on precipitation trends evolve and floodplain maps are updated, the local and regional vulnerability assessments should be updated periodically to reflect changing conditions. While the above assessments will help identify existing assets at risk of flooding, the region also should work to avoid expanding new streets and highways into flood prone areas. Avoiding road construction in floodplains may not always be possible; where necessary, such roads must be designed with future climate conditions in mind.

> *Transportation implementers* should conduct studies to determine climate-related vulnerabilities, then design transportation infrastructure for the climate of its anticipated lifespan.
>
> *CMAP* should explore conducting a regional transportation vulnerability assessment that builds on previous flooding vulnerability work to help inform regional priorities.

CMAP should incorporate climate resilience criteria in its evaluation of regionally significant projects and transportation programming.

State and local infrastructure agencies should review and update design manuals to ensure that the underlying climate data being used is up to date.

CMAP and partners should support continued efforts to integrate stormwater management into land use and transportation planning projects.

IDOT and local agencies should support stormwater management planning to reduce flooding vulnerability of the transportation system.

Improve the operational response to weather events to ensure mobility

This strategy will also appear in the Environment chapter

Some deficiencies currently exist in the availability of real-time roadway weather conditions. While IDOT, the Tollway, and Lake County report their weather information to TravelMidwest, the other counties currently do not. Weather responsive traffic management is also not widely used today, except for closing roads to traffic under severe conditions. In addition, as the region's maintenance fleets become equipped with GPS-based fleet management technology and center-based management software, opportunities are opened for better coordination of snow and ice removal between different jurisdictions. This will reduce costs and improve the efficiency of these activities.

It will be important to collect and analyze information about how facilities perform under various weather scenarios so agencies can develop planned responses to weather events. For example, focusing incident management resources on locations that are known to be especially affected by rain or snow can reduce congestion and secondary incidents. Because pavement flooding information has not been collected on a regional basis -- and there is no standard reporting system -- its impacts on our roadway operations are unknown.

CMAP and IDOT should work toward implementing a regional, multi-jurisdictional traffic management center, either virtual or traditional.

Transportation implementers should ensure redundant and reliable electricity and communications infrastructure.

Transportation implementers should expand ITS devices and traffic management capabilities to support weather-responsive traffic management strategies.

Transportation implementers should coordinate snow and ice removal across jurisdictions, when possible.

Transportation implementers should perform an analysis of road performance under severe weather conditions to develop planned responses.

CMAP should develop a regional pavement flooding reporting system to help plan for flood events.

Making transformative investments

Northeastern Illinois needs to invest in maintaining and enhancing the transportation system to keep up with demand and promote regional economic vitality. Today's investments must make the current system work better for everyone, while also preparing for future mobility influenced by new data and communication technology, private mobility services, and increasingly multimodal trips. At the same time, transportation dollars are scarce. Performance-based funding promises a more accountable process for programming transportation projects that meet current needs and address priorities like reinvestment, inclusive growth, and climate resilience. The region's transportation implementers, from local governments to state agencies, should continue to implement data-driven programming practices that emphasize selection of projects that meet clear regional objectives.

Yet traditional transportation revenue sources can no longer keep up with increasing costs. Without additional, sustainable revenues, the region will be unable to maintain the system in its current state of repair, let alone implement needed enhancements or expansions. Forecasted revenues from existing sources and additional reasonably expected revenues together make up $517.7 billion in revenue available through the year 2050. Of this, 94 percent is needed to operate and maintain the system in its current condition. The remaining 6 percent will be available for improving the system's condition, building regionally significant projects, and making other systematic enhancements -- smaller projects like intersection improvement, bike trails, and safety counter-measures that are nonetheless critical to make progress toward a seamless, multimodal transportation system -- while meeting the federal requirement of fiscal constraint.

Fully fund the region's transportation system

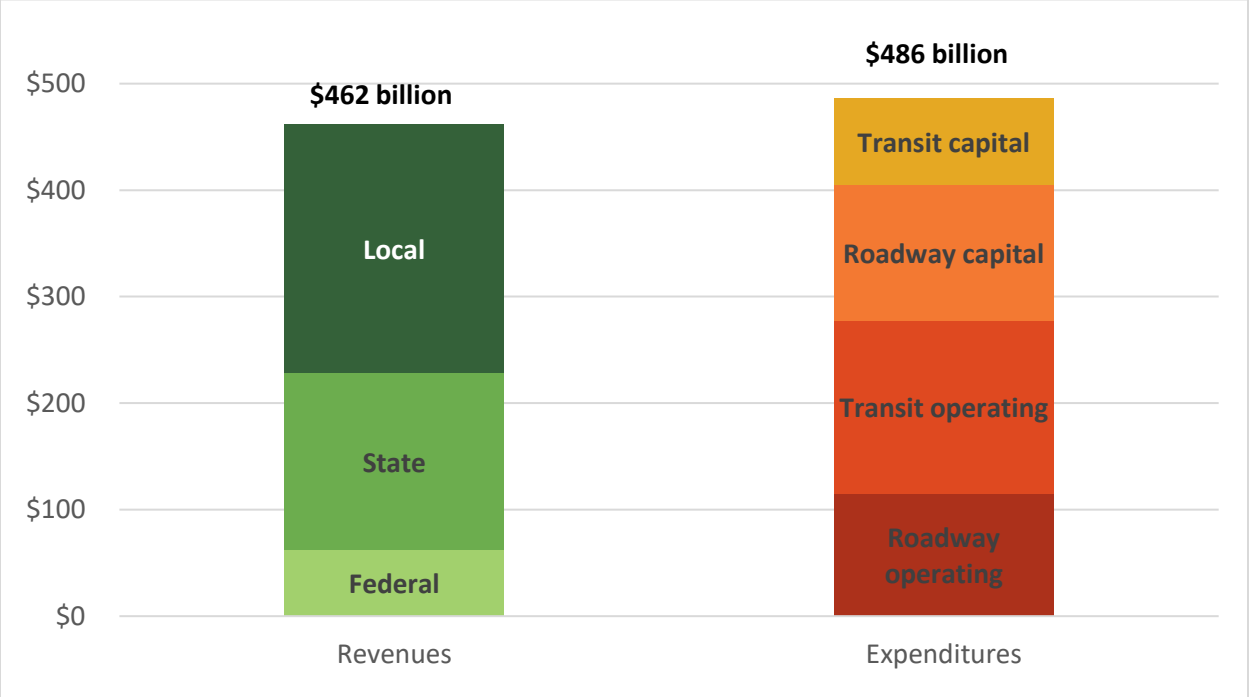
The region's transportation system is facing significant challenges. Decades of underinvestment have created a significant backlog of projects to reach state of good repair. Revenues underpinning the system no longer reflect current costs or ways of getting around. Federal and state revenues do not provide the support that they once did, and emerging federal policy indicates a growing reliance on state and local revenues. To maintain or improve the

transportation system, the state and region must rethink current funding formulas and look for new revenues.

[Infographic: trends in transportation revenue and operating costs in northeastern Illinois]

ON TO 2050 estimates that the cost of operating and maintaining the transportation system in its current condition -- retaining the current backlog -- will exceed the funds expected to be available under existing revenue sources. With that $24 billion gap through 2050, revenues under existing sources would not be sufficient to operate and maintain the transportation system, let alone enhance or expand it.

Forecasted transportation core revenues and expenditures, 2019-50, in billions (year of expenditure dollars)



Northeastern Illinois needs to overcome various obstacles to ensure sufficient funding for transportation. Systemic shifts are leading to declining revenues, and structural problems make current revenue sources inadequate for maintaining and operating the system. For example, revenues generated from flat rates, such as the federal and state motor fuel taxes (MFTs), have lost significant purchasing power due to inflation. At the same time, average vehicle fuel economy has been rising and vehicle travel has been stagnant, resulting in less fuel consumption. These trends will almost certainly result in state MFT revenues dwindling in the upcoming years. Moreover, growth in motor vehicle registration revenue in Illinois has been mostly flat since the mid-2000s due to slowing population growth, even while registrations per resident have risen statewide.

Federal revenues relied on by roadway and transit agencies in the region have been stagnant, with revenues expected to grow slower than the cost of the system. These slower growing elements of the region's transportation funding present real challenges to making necessary infrastructure improvements. The system could benefit from reliance on a modern user fee, such as one tied to vehicle miles travelled (VMT), which charges based on how far a car is driven. Drivers pay for what they use. Efforts to implement VMT fees are already taking shape in other states, and new technology is making it simpler to implement such fees; private sector per-mile prices are now widespread in the auto insurance market. Levied on a per-mile rather than per-gallon basis, VMT fees act as a direct user fee and also offer opportunities to integrate with other types of facility-level pricing. Eventually, VMT fees could vary on different types of facilities, at different times of day, and for different classes of vehicles.

Transit fares contribute more than 50 percent of transit operating revenues regionwide. In addition to fares, the transit system relies on a sales tax imposed by the Regional Transportation Authority. Structurally, sales taxes in Illinois are imposed on a narrow base, which includes tangible goods but few services. The sustainability of the sales tax base is precarious because consumption of services continues to rise faster than consumption of goods.

The region lacks a dedicated source of capital for its transit system, even as needs keep rising to maintain our aging system in its current state of repair. While improving the region's infrastructure is a high priority, simply keeping the overall system of transit, roads, and bridges in its current condition will cost more than $200 billion over the 32-year planning period.

Changing demands and emerging needs call for new investments. Among many factors, the number of congested hours is increasing annually; freight traffic is on the rise due to changing supply chain patterns and increasing next-day deliveries; residents are demanding new bicycle and pedestrian infrastructure; and private operators are creating new options for seamless mobility across multiple modes. Failure to improve infrastructure has a negative impact on the region's economy, which can only grow as fast as its transportation system will carry it. System enhancements are necessary so the region can continue to grow.

To surmount these challenges, we must continue to improve, modernize, enhance, and expand the system in a thoughtful manner. Because conditions would decline without additional revenues, the region must pursue new and enhanced sources and user fees that modernize and improve upon our existing funding structure. Leveraging sources like value capture or congestion pricing and other tolling opportunities can provide funding while contributing to larger goals such as transportation demand management and effectively matching the costs of the transportation system to those who benefit from its use. In fact, revenues generated from specific regionally significant transportation projects will be necessary to help fund those projects. The following table details ON TO 2050's financial plan for transportation, including forecasted revenues, as well as funding allocations to planned investments on the system.

Forecasted transportation revenues and expenditure allocations, 2019-50, in billions (year of expenditure dollars)

Revenues	
Federal revenues	$61.9
State revenues	$166.8
Local revenues	$233.0
Subtotal core revenues	$461.7
Increase state MFT and replace with VMT	$31.0
Expand the sales tax base to additional services	$11.0
Federal cost of freight services fee	$7.0
Regional revenue source	$5.0
Local parking pricing expansion	$2.0
Subtotal reasonably expected revenues	$56.0
Total revenues	**$517.7**
Expenditures	
Roadway operating/administering expenditures	$114.9
Transit operating/administering expenditures	$162.9
Roadway capital maintenance	$126.8
Transit capital maintenance	$81.1
Subtotal cost to administer, operate, and maintain in current condition*	$485.8
Improve system condition	$9.5
Make systematic enhancements	$17.5
Full cost of constrained regionally significant projects	$45.7
Capital cost allocated as maintenance and reconstruction	–$23.3
Offsetting revenues from tolling and value capture	–$17.5
Subtotal constrained new capacity cost of regionally significant projects	$4.9
Total expenditures	**$517.7**

*Note: maintenance and operating expenditures do not add up to the subtotal due to rounding.

The region has had some recent successes in identifying and implementing new revenue sources. New legislation for transit facility improvement areas (TFIAs)[32] allows the implementation of value capture for certain transit projects, which has been used to fund the CTA's Red and Purple Line Modernization (RPM). Completion of the west leg of the Elgin-O'Hare Western Access project saw a formerly free expressway converted to a tolled facility. Securing the enactment of other revenue sources to fully fund the transportation system will require much more work and advocacy by CMAP and its partners.

The following outlines strategies and associated actions to implement this recommendation.

[32] Chicago Metropolitan Agency for Planning, "Legislation creates an innovative mechanism to fund major transit infrastructure," July 8, 2016,

Implement sustainable, adequate revenue sources for transportation investments

Transportation revenue sources must be sufficient to maintain, operate, and improve the system; must provide stability in order to bond or fund multi-year transportation programs; and must be sustainable to ensure the source will grow in tandem with the cost of the system. Past state capital programs have only provided intermittent funding for transportation infrastructure and other capital needs, and they often have relied on taxes unrelated to transportation, such as taxes on alcohol or video poker. Maintaining our vital transportation network requires sustainable multimodal capital funding. Revenues approved as part of a future state capital program or larger infrastructure funding legislation must be allocated through performance-based criteria that focus on areas of greatest need, including to significantly improve the condition of the region's transit infrastructure.

In addition, revenues should be collected from those who benefit from the transportation system, via direct user fees such as tolling or revenue sources that capture benefits reaped from improvements to the system. To relieve congestion on the roadway system, revenues generated from automobile user fees should have the flexibility to address multimodal transportation problems and improve overall mobility in a corridor. New user fees must be implemented carefully to avoid undue burdens lower income residents -- for example, those who drive older vehicles, travel further to work, or depend on transit.

> The *State of Illinois* should establish adequate and sustainable multimodal capital funding that uses performance-based allocation of revenues.
>
> The *state, local governments, and other transportation implementers* should rely on user fees for new revenues to create a modern transportation funding system.
>
> *Transportation implementers* should allocate new revenues across modes to improve mobility for all users.

Increase the motor fuel tax and replace with a vehicle miles traveled fee

Of the many states that have enhanced their transportation revenues in recent years, most enacted a motor fuel tax increase. The State of Illinois should increase its MFT by at least 15 cents in the near term and index the overall rate to an inflationary measure to offset the long decline in purchasing power of the current 19-cent rate that has been in effect since 1990. Similarly, the federal gas tax, set at 18.4 cents per gallon in 1993, should be increased and indexed to an inflationary measure, improving solvency of the federal Highway Trust Fund without requiring non-transportation revenue infusions.

However, the motor fuel tax no longer reflects the way people travel or the many types of vehicles on the road. Fuel efficiency has increased, which erodes revenue despite its environmental and consumer benefits, and projections suggest electric vehicles will become a

much larger part of the fleet. Over the long term, then, the state and the federal government should replace their MFTs with a mileage-based user fee that taxes actual use of the system, as with a fee for vehicle miles traveled (VMT). Drivers already pay per mile under the current MFT, but the rate just varies based on the vehicle's fuel economy. For the Illinois MFT, instituting a fee of 2 cents per mile and indexing it to an inflationary measure would provide a sufficient, stable revenue source.

This revenue source would benefit from a streamlined national solution that allows each state to collect VMT fees from out-of-state drivers. In implementing a new revenue source, the state should also take the opportunity to lower the burden on lower-income drivers by integrating measures not available in the current MFT structure.

> *The State of Illinois* should increase the MFT by at least 15 cents per gallon and index the overall rate to an inflationary measure.
>
> *The State of Illinois* should begin necessary steps, including implementing pilot projects, to replace its MFT with a VMT fee of at least 2 cents per mile indexed to an inflationary measure.
>
> *The federal government* should increase the federal gas tax rate, index it to an inflationary measure, and in the long-term replace it with a mileage-based user fee such as, for example, VMT.
>
> *The federal government* should work with states to develop a national solution to implementing VMT fees at the state level.

Expand the sales tax base

Sales taxes in Illinois are imposed on a relatively narrow base, focused on tangible goods. Expanding the current base to include more services would generate additional revenue from existing state and local sources like the RTA sales tax, which supports transit operations in the RTA service area and other transportation and public safety purposes in the collar counties. The cost of operating the transit system continues to increase, yet consumption of services outside of the sales tax base is increasing faster than consumption of taxable goods. Expanding the base would also have the benefit of reducing economic distortions – that is, inadvertently influencing consumers' purchase of different goods and services based on whether or not they are taxed -- and volatility in the sales tax, as well as providing tax revenue from service-based commercial land uses.

Implement a federal cost of freight service fee

Freight investment is an emerging transportation need across the U.S. The federal government should enact a national sales tax of 0.3 percent on the cost of shipping freight. These revenues should be disbursed to states based on their freight needs through a formula program,

competitive program, or both. Such funding could benefit the region because it is North America's freight hub and has significant freight-related transportation needs. A cost-of-freight service fee has a user-fee nexus to the freight system, and could be collected from shippers using any mode to move goods, including truck, rail, and water. A similar approach is currently used for air-freight shipments. Administration of a cost-of-freight service fee could be challenging and would require new rules and practices to accurately and efficiently collect the fee.

Create a regional revenue source

Other than the RTA sales tax, which provides funding for transit operations, northeastern Illinois does not have a dedicated source of regional funding to provide for capital infrastructure investments. The State should enact such a revenue source for our seven counties to meet regional transportation needs and to achieve comprehensive planning goals. The region faces significant transportation infrastructure needs that are unlikely to be addressed adequately by federal or state sources, even if increased and restructured. Moreover, many of the transportation system needs in northeastern Illinois are unique. The investments needed in the region to move the transit system toward a state of good repair, decrease freight delay, and reduce roadway congestion are significantly greater than the needs in other parts of Illinois. A regional source such as a regional vehicle registration fee or regional motor fuel tax could raise significant revenues at relatively low rates and build on existing collection mechanisms, although their use would be confined to transportation investments.

Expand priced parking

Despite priced parking in some denser areas, the majority of parking spaces in the region are free. Priced parking has many benefits in areas with significant demand for parking. Free parking obscures the cost of driving and the cost of supportive infrastructure. Priced parking would reduce the number of vehicle trips, helping to reduce vehicle emissions and alleviate congestion. Municipalities should price more publicly owned parking spaces on streets and in municipal parking lots and garages to provide revenue for local transportation improvements and allow land to be transitioned to revenue-generating uses. In addition, municipalities could choose to implement variable parking rates, with higher prices charged at times and locations of peak demand or for certain vehicle types such as delivery trucks in business districts, allowing for more efficient use of available parking spaces.

Innovative parking strategies have already been implemented by municipalities in the region. The City of Chicago launched a Downtown Loading Zone Reform pilot program in 2017 that

changes how delivery trucks are charged in loading zones.[33] Based on recommendations in a LTA project study, the Village of Hinsdale increased hourly parking rates.[34]

Municipalities should pursue opportunities to price parking spaces and loading zones.

CMAP should provide technical assistance to municipalities interested in pricing and other parking management strategies.

Implement tolling

The state and region have insufficient revenues to fund operations and maintenance of the existing transportation system. Broader implementation of tolling offers a clear path to rebuild the expressway system, while tying new fees to those who use it the most. Implementing managed lanes and additional tolling on the region's existing expressway network would help relieve congestion as well as raise revenues to improve the condition of pavement and bridges. The Tollway and IDOT should work with CMAP to identify and then implement a system of managed lanes and tolling, as appropriate, on both existing and new expressway capacity.

On new expressway capacity, the Tollway and IDOT should pursue managed lanes and tolling to provide project funding as well as manage demand for the system. To defray the costs of reconstruction, IDOT and the Tollway should implement tolling in conjunction with planned reconstruction of existing, untolled facilities. Tolling on existing expressways will help to pay for the costs of reconstruction, as well as to free up existing revenues for the remainder of the system. With each transportation reauthorization, federal policy has increasingly embraced tolling on Interstate expressways, and current participation by Illinois in the Value Pricing Pilot Program creates additional tolling opportunities. Over the longer term, the technology associated with mileage-based user fees may even allow differential pricing on managed lanes without requiring construction of the tolling infrastructure needed today.

IDOT should implement tolling on existing expressways following reconstruction projects, except on very short or isolated segments, to help finance the reconstruction project.

IDOT and the Tollway should flexibly use toll revenue to pursue multimodal transportation system goals such as providing high-speed, high-reliability transit service to improve expressway corridors.

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[33] Chicago Metropolitan Agency for Planning, "Chicago establishes the Downtown Loading Zone Reform Pilot Program," October 26, 2016, http://www.cmap.illinois.gov/updates/all/-/asset_publisher/UIMfSLnFfMB6/content/chicago-establishes-the-downtown-loading-zone-reform-pilot-program

[34] Mannion, Annemarie, "Rate hike to discourage employees from parking downtown," *The Doings Hinsdale,* October 14, 2014, http://www.chicagotribune.com/suburbs/hinsdale/ct-parking-boxes-hinsdale-tl-1023-20141014-story.html

The federal and state governments should expand authority to toll existing capacity.

IDOT and the Tollway should implement priced managed lanes on all but the shortest or most isolated new expressway capacity to help get the best performance from the new capacity.

IDOT and the Tollway should implement policies that ensure equitable access to tolled facilities, such as providing drivers a baseline of credits for free travel.

Further implement value capture

Value capture offers an innovative option for local governments to harness a portion of the new private property value created by public infrastructure. Through increased rents, sales, and land values, adjacent property owners often benefit from the construction of a new or improved transportation facility. Project implementers should explore value capture to help fund capital costs associated with new, expanded transportation facilities, including transit service enhancements.

Value capture mechanisms currently available in Illinois include tax increment financing districts, special service areas, impact fees, and business district taxes.[35] Many communities already use these mechanisms for small scale transit and road improvements. For a select set of large projects, the state recently authorized TFIA districts that allow use of incremental property tax revenue to fund transit improvements. In addition to an established TFIA for the CTA North Red/Purple Line Modernization Project, other transit projects may also be ripe for the implementation of a value capture district. Adding further projects to the statute and broadening current value-capture types at the community level can help provide much-needed local revenues to support the transportation system.

Arterial roadway expansion projects are often implemented by either IDOT or county transportation departments. However, while these projects have regional mobility benefits, the need for expanded arterials is driven partly by local conditions, such as increased retail, office, or industrial development. In addition, a portion of the arterial project benefit accrues to the community or communities where the expansion is occurring, in the form of reduced congestion or increased revenues. The Illinois Tollway already requires that local governments applying for a new interchange contribute at least half of the project cost. IDOT and the counties could consider similar policies for arterial expansion projects, which would leverage local benefit to fund the project. Municipalities could utilize value capture districts such as BDs or SSAs to fund contributions or direct general fund revenues for this purpose.

[35] Chicago Metropolitan Agency for Planning, *Transportation Value Capture Analysis for the CMAP Region*, June 2011, http://www.cmap.illinois.gov/documents/10180/27573/VC-Final-Report_7-26-11-Executive-Summary.pdf/5efa8c6f-da3b-4fe8-8a61-33d322850a01

The State should improve TFIA provisions to focus on criteria and need rather than on specific transportation investments.

Local governments should continue to implement and expand value capture for projects with sufficient travel benefits and tax base to support improvement costs.

CMAP, IDOT and county DOTs should evaluate and consider a new policy to require local contributions for major arterial expansions.

Use public-private partnerships strategically

Innovative financing mechanisms such as Public Private Partnerships (PPPs) provide a greater role for the private sector in the design, construction, and management of transportation facilities. Project implementers should continue to use PPPs strategically to finance transportation improvements where fiscally appropriate. ON TO 2050 emphasizes that PPPs are often a source of financing that must be repaid, rather than a new revenue source. They have the potential to deliver benefits to projects, but these arrangements are complex and must be carefully considered on a transparent, case-by-case basis.

Consideration of whether a project should be delivered via a PPP arrangement must be independent from merits of the transportation project itself. In short, projects must serve regional priorities before being considered for a PPP. Project implementers should use best practices in comparing the use of a PPP to traditional project delivery, such as applying value-for-money approaches to analysis, assessing the risks of non-compete clauses, and providing formal public review in the evaluation of PPP proposals with appropriate checks on the disclosure of private financial information.

PPP agreements must be structured to protect the public interest, including mandated performance standards with penalties for noncompliance, reasonable limits on public payments, and provisions for revenue sharing above certain thresholds. Transportation agencies must also retain their ability to effectively operate, maintain, enhance, and expand transportation infrastructure connected or adjacent to facilities under a PPP. Transportation agencies must maintain ownership of and the right to share all data collected as part of a PPP. Other factors to consider include pricing policies, preferential access policies for law enforcement or transit vehicles, maintenance and operational standards, interoperability and coordination with public facilities, provisions that restrict the public sector's ability to invest in related projects, and remediation provisions.

Enhance the region's approach to transportation programming

The scarcity of transportation dollars demands that they be spent wisely and transparently. In the CMAP region as well as the rest of the state, transportation funding is largely allocated via formulas set in law or simply adhered to by custom. Even if these formulas once had a strong

basis in transportation system size or condition, they are not responsive to changing conditions, can spread funding too thin for any individual agency to accomplish more significant projects, and can prompt decision makers to focus on the money itself rather than on how individual projects address or do not address transportation needs. Performance-based funding promises a more accountable process for programming transportation projects, using a variety of measures to allocate scarce resources. Performance measures reflect the use, condition, and impact of transportation elements and are publicly reported for illustrative purposes or to demonstrate progress made toward established targets.

One of the most significant policy changes in the federal Moving Ahead for Progress in the 21st Century (MAP-21) transportation law, enacted in 2012, was to institute a national performance measurement system for the highway and transit programs. Implementation of this new system is just beginning, and it requires state DOTs, MPOs like CMAP, and transit agencies to work together to set targets that define the performance they want to achieve. Select infrastructure condition, safety, congestion, and emissions federal performance measures are closely aligned with recommendations in the Mobility chapter. These measures are plan indicators and are referenced throughout the mobility chapter and described in more detail in Appendix XX. More detail on all of the federally required performance measures is in Appendix XY.

Tying programming to quantifiable targets helps demonstrate the effectiveness of performance-based programming. MAP-21 and the FAST Act, the two most recent federal transportation authorization laws, require state departments of transportation and transit agencies to implement asset management practices. IDOT is responsible for implementing asset management on the NHS. CMAP, IDOT, county and municipal departments of transportation will need to collaborate to define the NHS and set appropriate targets for its condition. CMAP, RTA, and the transit agencies should continue to collaborate on achieving asset condition targets for the transit system. The long range planning process offers an opportunity to place a high priority on meeting federal asset management requirements and moving the system toward a state of good repair.

[Graphic: Data story on transit asset state of good repair, pavement and bridge condition indicators, and expenditures needed to meet targets]

Improving system condition while minimizing costs requires nuanced decision making. Rather than prioritize the repair of assets in worst condition first, asset management seeks to optimize lifecycle costs of achieving and sustaining a desired target condition. Implementing asset management can help improve system resilience in the face of changing climate or challenging economic conditions. These practices can be applied to a wide range of infrastructure, including freshwater, wastewater, signals and communications, vehicles, transit facilities and equipment, and pavement. Pavement management programs in particular have a demonstrated ability to stretch scarce funding farther. For additional recommendations about asset management, see the Governance and Environment chapters.

[Infographic illustrating benefits of asset management]

The following outlines strategies and associated actions to implement this recommendation.

Continue to implement performance-based programming regionwide

As transportation revenues remain constrained, performance-based programming can help identify the most effective way to meet local and regional priorities. There is room for all transportation implementers to improve data and methods for incorporating performance into processes for allocating funds and selecting projects. For example, IDOT has made recent progress in using a performance-based evaluation system to rank capacity projects for the state highway program. Rather than programming many conversions of two-lane to four-lane facilities that remain incomplete, the state is trying to "right-size" projects to address specific needs more cost-effectively, such as by making less expensive intersection improvements rather than expanding capacity on an entire segment. In another example, the Council of Mayors and City of Chicago have recently revised the way local Surface Transportation Program funds are allocated to emphasize transportation need.

IDOT should apply its new performance-based programming criteria, evaluate outcomes and continue to refine the criteria.

Programmers should incorporate the ON TO 2050 indicators and federal performance measures into their project selection and funding allocation decisions.

CMAP and partners should continue to evaluate the outcomes of regional transportation prioritization efforts to screen for equity and other desired outcomes and make iterative improvements to criteria to work toward achieving those outcomes.

RTA and transit agencies should commit to a performance-based competitive approach for a portion of transit capital funding, including ICE.

CMAP and partner agencies should work together to define how the TIP demonstrates the effect of transportation investments toward meeting the performance targets.

Expand asset management practices to the entire transportation system

There is great potential value in expanding asset management beyond the transit system and the NHS to local roads and local jurisdictions. As of 2016, only 40 percent of the region's municipalities used a pavement condition measure as part of a pavement management system and set long-term targets for pavement condition. While fully implementing pavement management systems can sometimes reduce maintenance expenditures, these plans have also provided convincing evidence of the need to devote more resources to preventing long-term declines in pavement conditions. Because their budgets are so limited, many communities with

pavement management systems prioritize fixing the worst conditions first rather than undertaking preventive maintenance. But this practice only drives up costs in the long-term and limits their capacity to undertake preventive maintenance.

More uniformity in data collection and analysis may help decision makers understand and prioritize pavement conditions. While IDOT collects pavement data for the National Highway System, there is limited pavement data for the remainder of the federal-aid system, consisting of collector streets and minor arterial highways. Furthermore, there is no uniformly adopted measure of pavement condition within the region. Improving the consistency of pavement condition data will enable the first region-wide pavement condition data system for all federal-aid roadways not on the NHS.

Local agencies should implement pavement management systems and base pavement management decisions on minimizing lifecycle maintenance costs.

CMAP should pilot asset management plans employing lifecycle cost principles with local communities.

Transit agencies should track and evaluate the impact of investments on asset condition.

CMAP should work with partner agencies toward uniformity in pavement data collection.

COGs and CMAP should develop trainings to assist all of the region's municipalities in implementing and improving asset management systems over the long term.

Build regionally significant projects

Regionally significant projects (RSPs) are capital investments in the region's expressways, transit system, and arterials with impacts and benefits that are large enough to warrant additional discussion through the regional planning process. These include large reconstruction projects and additions to the system. The federal government requires regional planning agencies to demonstrate fiscal constraint by determining that sufficient resources will be available to construct projects recommended in the plan. Careful selection of these projects must meet the federal standard of fiscal constraint, while also helping to achieve regional goals. These constrained projects can help the region meet today's needs, adapt to changing mobility patterns for goods and people, and support economic success overall. Only constrained projects are eligible to receive federal transportation funds and obtain certain federal approvals.

Investment in RSPs must balance many priorities, including carefully allocating the region's limited transportation revenues. ON TO 2050 therefore includes a relatively small number of

constrained regionally significant projects as priorities and recommends further study of others that are classified as "unconstrained." The plan focuses particularly on projects that reconstruct or enhance the existing network, with few expansion projects. This is due in part to the plan's priorities and to fiscal constraint. If current revenues and trends remain the same, the region will have fewer resources for RSPs. Implementation of many of these projects will require action not only on the projects themselves, but on implementing additional local, regional, state, and federal transportation revenues.

[Maps: Fiscally constrained highway and transit projects]

To identify constrained RSPs, CMAP solicited candidate projects from partner agencies as well as from the public, then undertook an extensive evaluation of the benefits of the projects, which is documented in the Project Benefits Report appendix. Candidate projects meet one of the following thresholds:

1. Costs at least $100 million and either (a) changes capacity on the National Highway System or is a new expressway or principal arterial, or (b) changes capacity on transit services with some separate rights-of-way or shared right-of-way where transit has priority over other traffic
2. Costs at least $250 million and improves the state of good repair for a particular highway or transit facility

Evaluation of each project focused on the current need, the modeled benefit with 2050 population and employment, and the degree to which the project fits with ON TO 2050 planning priorities.[36]

For highway projects, current need includes whether the project addresses a significant congestion, safety, or reliability problem occurring today. This includes whether the roadway is a near-term priority for pavement reconstruction or bridge replacement, although over the long-term time frame of the plan, many assets will deteriorate to the point of requiring replacement. For transit projects, assessment of current need includes the degree to which the project will improve current state of repair or help relieve a capacity constraint, which is analogous to congestion on the highway system.

[Map: Roadway needs and Constrained Regionally Significant projects]

[Map: Capacity constraints on CTA rail and Metra]

[36] LINK to benefits report appendix for more details about methodology.

The evaluation of 2050 performance is based on travel demand modeling that uses preliminary 2050 household forecasts to estimate which projects will have the highest relative benefits in the future. CMAP carried out the highway project analysis, while RTA carried out the transit project analysis. RTA's evaluation was based on service schedules and other project characteristics provided by the service boards or other project submitter.

The planning priorities assessment connects the RSP evaluation to the three overarching principles of ON TO 2050. While prioritized investment informs the entire project evaluation process, aspects of resilience and inclusive growth were also evaluated. Part of resilience is protecting against injury to the natural systems that sustain the region, so the evaluation examines potential to create more impervious surfaces that degrade water resources and potential impact to important natural areas. Resilience also involves creating a variety of transportation options and increasing access, for example, so residents can still travel after flooding and other adverse events. Promoting inclusive growth through the transportation network emphasizes projects that serve residents of economically disconnected areas, as well as connecting them to high-quality jobs with low barriers to entry.

Infographic: Explain economic benefits of transportation investment]

The constrained RSPs total $45.6 billion in year of expenditure (YOE) dollars, which takes into account incremental operating costs ($3.7 billion) and capital costs ($18.7 billion for new capacity and $23.3 billion for reconstruction elements) as well as anticipated cost inflation by the time the project is constructed and begins operation. Except for highway or transit extensions, most projects include reconstruction elements. The cost of fixing existing infrastructure is accounted for separately in the financial plan forecast, and only the cost associated with new capacity requires identifying additional available resources to meet fiscal constraint. Approximately 60 percent of the new capacity cost is for transit projects and 40 percent for highway improvements.

ON TO 2050 acknowledges that tolling will be needed to defray the costs of rebuilding the expressway system and that value capture will be required to fund transit needs. The plan assumes that tolling on all lanes would be implemented following most planned reconstruction projects, generating $14.6 billion in bond proceeds to offset project costs. Transit projects can also generate revenue that can be used to offset their costs. Recently authorized state legislation allows Transit Facility Improvement Areas in which a form of value capture can be used to fund transit capital investments. Four areas defined in statute that benefit from rail service can have part of their property tax revenues directed to repay bonds issued to pay for capital costs. ON TO 2050 includes $2.97 billion in bond proceeds from value capture to offset transit project costs. For more formation about revenue, see the strategy "*Fully fund the region's transportation system*."

There are some types of projects that do not meet the cost threshold for RSPs, but are nonetheless important to fund and implement as systematic enhancements to the transportation system. The officially adopted Northeastern Illinois Greenways and Trails Plan (RGTP) envisions a network of continuous greenway and trail corridors, linked across jurisdictions, providing scenic beauty, natural habitat, and recreational and transportation opportunities. Completion of this plan and complementary on-street facilities would create a robust, integrated network, connecting cyclists and pedestrians to communities and amenities across the region. Since 2013, CMAP has been using the RGTP to guide funding decisions for the Transportation Alternatives program.

The Chicago Region Environmental and Transportation Efficiency program (CREATE) is a public-private partnership between freight railroads, U.S. DOT, IDOT, the City of Chicago, Metra, and Amtrak.[37] First announced in 2003, the CREATE program consists of 70 projects spanning a range of rail infrastructure improvements. As of January 2018, 29 projects have been completed, five are under construction, 17 are in various design stages, and the remaining 19 projects will begin upon identification of funding resources.[38] Most of the CREATE program's funding to date has come from the public sector, primarily the federal and state governments, and yet implementation of its most public-facing projects has lagged. The 75th Street Corridor Improvement Project (75th St. CIP) is the largest, most complex, and most significant remaining component of the CREATE program, and a constrained RSP. After completion of the 75th St. CIP, the remaining projects include Passenger Corridors and grade separation projects that do not always meet the RSP threshold. These projects provide direct benefit to the public via improved Metra and Amtrak rail services and reduced delay for trucks and motorists.

The following outlines the selected regionally significant projects that can help the region improve mobility, the economy, and quality of life.

[37] "CREATE program status check," CMAP, February 20, 2015, http://cmap.is/1JCKVha.

[38] "Status of CREATE projects (1/25/2017)," CREATE program, January 25, 2017, http://createprogram.org/linked_files/status_map.pdf.

Expressway Projects

Because of pressing needs on the existing expressway system and the region's limited financial resources, ON TO 2050 does not make major commitments to building and then maintaining new roadways to serve mostly future demand. Instead, the region must reinvest in the existing system. The region's expressways were largely built in the 1950s and 1960s, and the standard lifespan of these facilities is 50 years. While pavement and bridge rehabilitation can extend the life of these assets, by 2050 the only economical improvement will be a complete rebuild. Due to lagging investment in the region's road system, that rebuild is needed almost immediately in several cases. By emphasizing reinvestment in the current system, the region can also help support existing communities and, crucially, limit the environmental impacts and long term costs of constructing new infrastructure.

The following are the constrained regionally significant expressway projects

The oldest parts of the existing system are also the most affected by chronically unreliable travel times and in some places have major safety problems, both of which can be addressed through design and investments in active traffic management as part of the reconstruction. In some cases, adding capacity through new managed lanes is also appropriate. Managed lanes make the most of any investment in new road capacity by using pricing to control the amount of traffic entering the lanes, which in turn helps keep the lanes uncongested. They also give travelers an option to ensure reliably fast trips even during peak periods.

Elgin O-Hare Western Access, RSP 20

The Elgin O'Hare Western Access (EOWA) project will provide a new, limited-access facility to reduce congestion and improve access to the airport, supporting the ongoing modernization and expansion of O'Hare. Federal approval for the EOWA was given in 2013, and construction is now underway. The project includes three main components: reconstructing and widening the existing Elgin O'Hare Expressway, extending the expressway east to O'Hare, and adding an expressway around the western side of O'Hare from I-90 to I-294 (the western bypass). All three components will be tolled. The first two components are expected to be complete in 2018, while the western bypass is planned for 2025.

Jane Byrne Interchange Reconstruction, RSP 33

The Jane Byrne Interchange Reconstruction project modernizes the busiest intersection in the region, which has not had a major rehabilitation since it was first built more than a half-century ago. While it is mostly a reconstruction, an additional lane is being added on the east-north and north-west ramps, as well as three new flyovers. A new through-lane will also be added on I-90/94, correcting a deficiency that forces drivers to switch lanes when entering the interchange. Both the capacity and reconstruction elements of the project are considered constrained in ON TO 2050. The new ramp configurations and added lanes are expected to improve safety and significantly reduce crashes for all users. The project is currently under construction.

I-55 Stevenson Managed Lanes, RSP 146
The I-55 Stevenson Expressway is one of the most congested segments in the Chicago area. This project would add managed lanes from I-355 to the Dan Ryan. Because of the wide inside shoulder with full-depth pavement along part of the route, adding managed lanes can be relatively inexpensive, making it the most cost-effective congestion reduction project evaluated. IDOT currently anticipates adding two new lanes to assure travel time reliability. However, modeling suggests two new lanes would be unnecessary; one of the managed lanes could be converted from an adjacent general purpose lane. Given the success of the I-55 bus on shoulder service, IDOT should specifically incorporate bus priority features into the roadway design and plan for increased service.

IDOT is seeking to build the project through a public-private partnership. It will be critical for the Department to protect the public interest by using a PPP structure that transfers some of the risk to the private partner. It is not assumed that all existing lanes will be tolled as part of this project, but over the longer term, when the adjacent general purpose lanes are reconstructed as part of I-55 Stevenson Expressway Reconstruction (RSP 137), tolling should be implemented on all lanes. This project is also supported in the Will County Community Friendly Freight Mobility Plan.

I-55 Add-Lanes and Reconstruction, RSP 34
This section of I-55 from I-80 to Coal City Rd., contains a 1,400-foot bridge over the Des Plaines River that was built in 1957 and requires frequent rehabilitation. Also importantly, this southern segment of I-55 in Will County serves three large logistics parks and two intermodal rail terminals. The road is typically two lanes in each direction, an operational challenge because of the large numbers of trucks entering, exiting, and traveling on the road. This project would make near-term interchange and spot capacity improvements and ultimately add an additional lane.

I-80 Managed Lanes (US 30 to I-294), RSP 37
Due to the high volume of trucks on I-80, local safety concerns, and other travel needs, I-80 east of US 30 should also be expanded to include managed lanes, with a full examination that focuses on operations across the whole I-80 corridor (in conjunction with RSP 36) and includes consideration of truck-only lanes, full facility tolling, and managed lanes. This project is also supported in the Will County Community Friendly Freight Mobility Plan.

Western I-80 Reconstruction and Mobility Improvements (Ridge Rd. to US 30), RSP 36
The western segment of I-80 from Ridge Rd. to US 30 in Will County is in critical need of improvement, with failing pavement conditions and the bridge over the Des Plaines River requiring replacement. The costs of reconstruction and new capacity are considered fiscally constrained in ON TO 2050. While this segment has immediate needs and IDOT will soon be seeking design approval, a full examination of the I-80 corridor to include prospects for developing managed lanes, including truck-only lanes, is recommended. This project is also supported in the Will County Community Friendly Freight Mobility Plan.

I-190 Access Improvements, RSP 32
O'Hare International Airport and its surrounding freight and manufacturing development are an economic engine for the region, but the area experiences significant congestion and unreliable travel times. The I-190 Access Improvements project consists of reconfiguring arterial access to I-190 and O'Hare International Airport to improve mobility as well as ultimately reconstructing and adding capacity to mainline I-190. Elements of this project are under construction.

I-290 Eisenhower Reconstruction and Managed Lanes, RSP 30
This project would reconstruct the second oldest pavement on the expressway system and addresses many bridges that are in poor condition. The Eisenhower consistently ranks as one of the five most congested segments in the region, partly because of the bottleneck created where it drops from four lanes to three west of Central Avenue. It suffers significant safety problems because of several left-hand ramps. The project received a record of decision from FHWA in 2017 to rebuild the expressway and add a high-occupancy toll lane. Given the cost of the project and the lack of alternative fund sources, IDOT should strongly consider tolling the entire facility to offset its construction cost as well as potentially implementing a dual managed lane to improve reliability.

I-290/IL 53/I-90 Interchange Improvement, RSP 21
This project would improve a cloverleaf interchange that is integrated with ramps to and from the Woodfield Mall in Schaumburg, causing weaving, congestion, and crashes. Some of the loop ramps would be replaced with higher-capacity directional ramps to reduce crashes and improve flow. This project has been studied but requires additional engineering.

I-294/I-290 Interchange Improvement, RSP 24
The I-290 Eisenhower/I-294 Tri-State interchange has insufficient capacity on ramps and heavy truck volumes. Loop ramps and weaving movements cause congestion and high crash rates. Congestion on southbound I-290 can extend to 14 hours of the day. This project will reconstruct the interchange to eliminate weaving movements, replace loop ramps with higher-capacity directional ramps, and reduce crashes. A key benefit will be to improve capacity from the south leg (I-294) to and from the northwest (I-290), which is a regional bottleneck. Design engineering is still required for this project.

I-294 Central Tri-State Reconstruction and Mobility Improvements, RSP 23
The central portion of the I-294 Tristate (95th St. to Balmoral) has the oldest pavement on the expressway system, yet it is also the most-heavily used portion of the Tollway system. The Tollway proposes to rebuild the expressway and add a flex lane along portions of the route. This presents opportunities to integrate express bus service, and the design of the project should specifically include express bus facilities.

I-294/I-57 Interchange Addition, RSP 22

The crossing of I-294 and I-57 is the only place in the region, and one of very few locations in the country, where two interstates cross but do not have an interchange. The I-294/I-57 interchange project will connect these two interstates for improved accessibility to and from the south suburbs and for improved north-south regional travel. Construction of Phase 1 was completed in 2014 and provided new ramps to connect northbound I-57 to northbound I-294 and southbound I-294 to southbound I-57, as well as an entrance and exit ramp from I-294 to 147th St. The final phase is planned for completion in 2024.

Constrained longer-term reconstruction needs

ON TO 2050 covers a planning period of 32 years, during which many expressway segments will come to the end of their useful lives. In future project studies on these segments, adding capacity should be considered as well, and CMAP's evaluation suggests that in many cases this capacity would be beneficial. However, in ON TO 2050, only the reconstruction elements of the following projects are constrained:

- I-57 Reconstruction (I-94 to I-80, I-80 to Will/Kankakee border), RSP 35
- I-94 Bishop Ford Expressway Reconstruction, RSP 135
- I-90/I-94 Kennedy and Dan Ryan Expressway Reconstruction (Hubbard to 31st St.), RSP 136
- I-55 Stevenson Expressway Reconstruction, RSP 137
- I-90 Kennedy Expressway Reconstruction, RSP 138
- I-94 Edens Expressway Reconstruction, RSP 139
- I-90/I-94 Kennedy Expressway Reconstruction (Edens Junction to Hubbard St.), RSP 140
- I-290/IL-53 Reconstruction, RSP 141

Transit projects

Like the expressway system, much of the rail network will need to be rebuilt during the planning period. For that reason, ON TO 2050 limits expansion of the system, instead emphasizing improvements that enable the current system to carry more passengers more quickly and reliably, particularly on lines that have capacity constraints. In some cases, this entails also expanding overall capital by purchasing more rolling stock (trains and buses) to allow for increased service. Both rail and bus improvements are recommended in ON TO 2050. Faster, more comfortable, high frequency, and more reliable bus service is a key to increasing transit ridership.

The following are the constrained regionally significant transit projects

CTA Blue Line Forest Park Reconstruction, RSP 93

This project would reconstruct the Forest Park Branch of the Blue Line, which is in a deteriorated condition. It includes full modernization of existing infrastructure and upgrades for future capacity increases. The project will reconstruct and reconfigure the Forest Park Terminal and Yard. This project would have a high economic impact for the investment required as well as benefits to economically disconnected areas. CTA has completed a vision study on the project. Reconstruction of the line would be best completed in coordination with the reconstruction of the Eisenhower.

CTA Blue Line Capacity Project, RSP 147

This project would make improvements to the traction power system between O'Hare and Clinton Stations to enable increased capacity on the CTA line expected to see the second largest growth in ridership demand. It may include station improvements, wayside energy storage systems, third rail replacement and/or new infill substations and installation of auxiliary negative rail. A load flow study is planned to better understand needs. This project supports the O'Hare International Airport expansion and access for tourists and other visitors to the region.

CTA North Red/Purple Line Modernization Phase 1, RSP 58A

The Red/Purple Modernization project envisions a modernization of the 100-year old "L" lines serving the north side of Chicago and is a significant reinvestment in existing communities. As CTA's most capacity-constrained line, the project would include a bypass separating the Red Line and Purple Line tracks from the Brown Line north of the Belmont Station to allow higher passenger capacity. The project also reconstructs deteriorated track and stations between the Lawrence and Bryn Mawr stations. It has committed funding under the federal New Starts program as well as under TFIA, and is currently under construction.

CTA North Red/Purple Line Modernization Future Phases, RSP 58B

Future phases of the Red/Purple Modernization project will continue to address deteriorated viaduct, track, and station conditions from Belmont station to Linden station as well as allow for additional service. Modeling suggests very high benefits to additional service on the line made possible by investments in capacity, with the largest expected economic impacts of any of the

projects evaluated. Reconstruction of viaducts also offers the potential to open neighborhood thoroughfares. Because of the need to reconstruct so much of the existing facility, the project is costly. It is expected that value capture through TFIA would also be able to provide a contribution to the overall cost.

CTA Red Line South Extension, RSP 57
Residents of the south side of Chicago and the near south suburbs suffer long transit commute times. By extending the Red Line south to 130th St. from its current terminus at 95th St., the area it serves would see improved access to jobs, particularly by easy transfers to CTA rail downtown, and reduced travel times. The project is relatively cost-effective at increasing ridership and has a high benefit to EDAs. Because it will also allow for a larger yard, it will help address capacity constraints on the whole line. The large park-and-ride lot to be constructed at the 130th St. station will provide new commute options for southern Cook County as well. Value capture through the TFIA legislation should be used to help fund the project.

City of Chicago BRT group
This group of projects includes a significant investment in speeding bus travel within the City of Chicago. Although CDOT and CTA have both investigated numerous routes, a final set of projects has not been identified. More planning must occur to identify the highest ridership routes on which speed and reliability improvements would be most beneficial. The program includes Ashland Ave BRT (RSP 106), a project with strong performance but on which progress has stalled. It is the most cost-effective project modeled for ON TO 2050. The program also includes the South Halsted BRT route (RSP 108), a collaboration between CTA and Pace, which would have significant benefits to EDAs. Finally, the currently identified list includes the South Lakefront-Museum Campus Access Improvement (RSP 104), which would address the difficulty of reaching the museum campus by transit and help promote tourism.

Metra A-2 Crossing, RSP 98
This project would reconstruct the A-2 Crossing (Western Ave. and Kinzie St.) between Union Pacific and Milwaukee District tracks. The rebuild will help reduce conflicts between Milwaukee District North, Milwaukee District West, North Central Service and Union Pacific West trains and improve reliability for passengers. The project would have a high economic impact for the investment. Among the alternatives under evaluation are moving the crossing to a new location one mile east and constructing a flyover near the current crossing.

Metra BNSF Improvements, RSP 72
The BNSF Improvements benefit new and existing riders on Metra's highest ridership line and is the second most cost-effective of all the projects studied. This project would make track, signal, and other improvements to the BNSF Line to support growth in ridership and upgrades to the capacity of the line. Improvements would allow for additional express service to the highest ridership stations on the line alleviating crowding. A new station at Eola Rd. in Naperville could provide additional commuter options and relief for congested stations.

Metra Milwaukee District West Improvements, RSP 79
This project would make track, signal, and other improvements to the Milwaukee District West Line to support increased capacity. A storage yard and maintenance facility expansion will enable additional peak period express and reverse commute service. Adding a fourth track from the A-5 junction to Randolph St. in Chicago will also benefit MD-N and NCS. The replacement of the Fox River Bridge (Z-100) is currently underway, funded in part by a TIGER grant. A second track across the river will remove a bottleneck that has restricted capacity.

Metra UP North Improvements, RSP 68
The UP North has the highest percentage of trains over capacity on the Metra system and has major state of good repair problems. The UP North Improvements will improve the capacity and reliability of the line through installation of crossovers and track improvements, and a new outlying coach yard will allow for more efficient servicing of equipment and accommodate expansion of service. Reconstruction of the bridges along the line is a major cost item in the project and will provide significant state of good repair improvements. In addition to planned upgrades to existing stations, a new station at Peterson and Ridge Aves. is funded.

Metra UP Northwest Improvements and Extension, RSP 66
The UP Northwest is one of Metra's most capacity-constrained lines, with inadequate yard space that forces ad hoc storage of trains on sidings along the route. A 1.6 mile extension to Johnsburg from McHenry will also allow space for new yards. Other infrastructure upgrades include improvements to the signal system, crossovers, and track improvements to increase capacity and reliability. Two additional stations will be added to the line at Prairie Grove and Ridgefield. These combined improvements are estimated to increase ridership considerably on the line. Planning for transit-supportive development at new stations and for feeder bus service will increase access along the line.

Metra UP West Improvements, RSP 69
The UP West Improvements will provide track, signal, safety, and infrastructure improvements to increase passenger service and coordinate with freight traffic. Specifically, a third track will be added to an existing double-track portion of the line east of Elmhurst. These improvements will enable the UP West to better serve as an alternative to the BNSF line and also to operate more effectively in coordination with freight rail movements. Part of the project involves upgrades to signal systems, crossovers, pedestrian safety improvements, and new triple track.

Metra Rock Island Improvements, RSP 70
Metra's improvements to the Rock Island District (RID) Line will enhance coordination between freight and Metra trains as well as allow for eventual connection of the SouthWest Service (SWS) with LaSalle St. Station. This project will improve rail freight movement through the region, provide capacity for additional express service, reduce congestion, and improve access at Union Station. Improvements include adding a third track between Gresham Junction and a point north of 16th Street Junction, new signals, and an expanded and modernized 47th Street

Yard, which will have major efficiency benefits to Metra operations. CREATE Project P1, a rail flyover at the Englewood interlocking, is also part of this project and is complete.

75th St. Corridor Investment Program / Metra SouthWest Service Enhancements, RSP 67
This is one of the last major CREATE projects. Six major railroads—two passenger and four freight—pass through the 75th St. corridor on Chicago's south side, crossing each other and local roads and creating intense train and road traffic back-ups. In addition, the current track layout routes Metra's Southwest Service to the congested Union Station. The proposed improvements include two rail-to-rail grade separations to untangle the railroad tracks, including a flyover to reroute the Metra Southwest Service to the less congested La Salle Street Station. This, combined with additional Southwest Service track and less freight interference, will facilitate additional trains and other service improvements for the Southwest Service. The engineering for this project is advanced; final design is required. It has strong potential as a public-private project among the State of Illinois, City of Chicago, Cook County, Metra, and private railroads.

Pace Pulse Expansion, RSP 102A
The Pace Pulse program of projects would speed bus service on Pace's most heavily used routes by implementing transit signal priority, stations with enhanced amenities, and other improvements. Modeling suggests that the project would be very cost-effective and would have significant average commute time savings for a bus project. Only the near-term projects in the full 24-route program are considered constrained in ON TO 2050.

West Loop Transportation Center Phase I (Union Station) Improvements, RSP 85
The West Loop Transportation Center is envisioned as a new transportation hub that would reconfigure Chicago Union Station and ultimately lead to greatly improved connections between rapid transit, bus, commuter rail, and intercity rail services. Amtrak is the owner and operator of Union Station, and this project will also promote access for tourism, as well as intercity bus and rail connections. Only Phase 1 is on the fiscally constrained project list; it will increase capacity within the existing footprint of Union Station by creating new platforms and tracks and by repurposing currently inactive tracks and platforms formerly used for mail handling. It will also expand platforms used by Metra commuters, reconfigure the station's internal spaces to increase passenger capacity, and provide a weather-protected pedestrian connection to the Blue Line. Continued attention to intercity bus accommodations is needed in Phase 1. It is expected that value capture through TFIA would also be able to provide a contribution to the overall cost. Phase 2 is envisioned as creating a new subway along Clinton to connect from Union Station to the Blue Line; this element is unconstrained.

Arterial projects

The arterial projects considered in ON TO 2050 are confined to larger improvements to the non-Interstate portion of the NHS, that is, the major roadways that carry a quarter of the traffic in the region. There are many needs for traffic flow, safety, and pavement and bridge condition improvement on this roadway system alone. Most of the projects submitted are relatively short-term priorities for implementers, with construction expected in four to seven years, and with design approval already in place or anticipated to be sought before the ON TO 2050 update.

The highest priority regional arterial project is the North Lakeshore Drive Improvements. This complex and multi-faceted project would reconstruct numerous failing bridges, correct major safety deficiencies, and protect the drive from worsening storm damage. It must fairly balance the needs of all users, including drivers, transit riders, and lakefront park users. Lakeshore Drive suffers from severe travel time unreliability, and with very high bus ridership in the corridor -- 34,000 riders per day, greater than many CTA rail branches -- bus passengers face the same congestion and unreliability that auto users do. It is critical for the project to include managed lane strategies to help guarantee more predictable travel, with a strong emphasis on pricing strategies. Treatments to speed bus travel and allow for more service are key elements of the project. Both the roadway and transit improvements are considered constrained.

The following are the constrained regionally significant arterial projects

Project	RSP ID	Total cost (YOE $b)	North/West Limits	South/East Limits	Rationale
Central Av	151	$0.1	BRC Railroad	54th St	Addresses grade crossing that is part of CREATE
IL-31 Front St	14	$0.1	IL-120	IL-176	Addresses heavy congestion in eastern McHenry County
IL-43/Harlem Ave	109	$0.2	BRC Railroad	65th St	Addresses grade crossing that is part of CREATE
IL-47	110	$0.3	Charles Rd	Reed Rd	Improves deficient bridges and improves operations
IL-60	10	$0.1	IL-176/ Maple Ave	CN RR	Addresses heavy congestion in Lake County
IL-62/Algonquin Rd	11	$0.1	IL-25	IL-68	Addresses safety, condition, and congestion issues
IL-83/Barron Blvd	13	$0.1	Petite Lake Rd	IL-120/Belvidere Rd	Provides better reliability and freight mobility
IL-83/Kingery Hwy	111	$0.1	31st St	Central Ave	Estimated to provide significant economic benefits
IL-131/Greenbay Rd	14	$0.2	Russell Rd	Sunset Ave	Provides better reliability and has equity benefits

Project	RSP ID	Total cost (YOE $b)	North/West Limits	South/East Limits	Rationale
IL-173/Rosecrans Rd	15	$0.1	IL-59	US-41/Skokie Hwy	Addresses heavy congestion in Lake County
Laraway Rd	55	$0.3	US-52	Harlem Ave	Provides upgrade roadway to accommodate growth in corridor
North Lake Shore Dr Improvements	89	$2.9	Hollywood Ave	US-41/Grand Ave	Addresses major structural, safety, and operational issues
Randall Rd	46	$0.5	Corporate Boulevard	North of Oak St	Provides significant mobility and economic benefits
US-12/95th St	112	$0.2	At Stony Island Ave		Addresses significant intersection operational issues
US-20/Lake St	113	$0.1	Randall Rd	Shales Pkwy	Replaces deficient bridges and makes key safety improvements
US-45/Olde Half Day Rd	114	$0.1	IL-60/ Townline Rd	IL-22/Half Day Rd	Addresses major mobility/reliability need
Vollmer Rd	145	$0.1	Kedzie Ave	Western Ave	Benefits economically disconnected areas
Wilmington-Peotone Rd	56	$0.3	IL 53	Drecksler Rd	Improves freight movement and provides economic benefits

Unconstrained projects

Numerous projects could not be included within the fiscally constrained portion of ON TO 2050, either because they require more study or because they cannot be completed within the limits of the region's forecasted revenues. Projects that meet the RSP definition cannot receive environmental clearance from FHWA or FTA under the National Environmental Policy Act, or access certain federal funding and financing programs, without being in the fiscally constrained portion of the plan. However, projects on the unconstrained list can continue to be studied. The required four-year update of ON TO 2050 in 2022 will provide an opportunity to review the list of RSPs. In addition, plan amendments can be offered outside of the update cycle according to an amendment process that will be tailored to reflect ON TO 2050's planning priorities.

The following are the unconstrained regionally significant projects

Caton Farm Rd. – Bruce Rd. Corridor

This project would provide a new bridge over the Des Plaines River and I & M Canal as well as approach roadway to join Caton Farm Rd. and Bruce Rd. in Will County. Various alignments are presently being studied. Further work is needed to select a final alignment and develop a financing plan for the project before consideration for the fiscally constrained portion of the plan.

Chicago Streetcar Light Rail Lines

Numerous routes for light rail lines in the City of Chicago were submitted by the public, in some cases replacing existing CTA bus service. Limited planning has been conducted with only high-level cost estimation. Modeling for some routes suggests they could generate appreciable ridership, have positive economic impacts, and have other benefits. However, they would represent a relatively high capital investment while not addressing existing system needs.

Circle Line

The Circle Line is a proposed circumferential rail service that would connect several existing CTA rail lines. It would be built in two phases, with the north section traveling largely along Ashland Avenue from the Green/Pink Lines to North/Clybourn on the Red Line. The southern portion of the Circle Line would run from the Ashland station on the Green/Pink Lines to the Orange Line and use that right of way to enter the Loop. This project is costly for the level of benefits it would provide. Ashland BRT also would serve the corridor more cost-effectively.

CrossRail Chicago

This complex project involves electrifying and making operational changes to the Metra North Central Service as well as linking that service to the Metra Electric via the St. Charles Air Line south of Union Station. The project shares some elements with the O'Hare Express and may depend on that project's outcome.

Cross-Town Tollway and CTA Route
The Cross-Town Expressway would be a new expressway along Cicero Ave. in Chicago. As submitted by the public, it also includes a rail line similar to the Mid-City Transitway. While it is estimated to reduce congestion and improve job access more than any other project, it would be very expensive and disruptive to existing communities.

CTA Blue Line West Extension
This project would extend the CTA Blue Line Forest Park Branch to the west along the I-290 and I-88 corridors, with an interim terminus at Mannheim Rd. and an ultimate terminus as far west as Lombard. However, there are major state of good repair needs on the existing line, and improving existing service through the constrained Forest Park Branch Reconstruction project would have a much larger positive impact on riders than extending it westward.

CTA Brown Line Core Capacity
Following station reconstructions and platform extensions to serve 8-car trains in the mid-2000s, this project would further increase capacity on the Brown Line, CTA's most capacity-constrained line. Additional study to determine alternatives to expand the Kimball Yard and add turnbacks to short-turn trains, among other potential improvements, is a high priority.

CTA Brown Line Extension
This project would extend the CTA Brown Line along Lawrence Avenue from Kimball to the Jefferson Park Transit Center. Rail alternatives are costly relative to the benefits they would provide.

CTA Green Line Extension
This project would extend the Green Line to its historic terminus at Stony Island Avenue. It has a high cost relative to its expected benefits.

CTA Orange Line Extension
This project would extend the CTA Orange Line from its current terminus at Midway airport to the Ford City shopping center. It would have relatively low benefits for its cost.

CTA Yellow Line Enhancements and Extension
This project would extend the Yellow Line from its current terminus at Dempster Street Station to Old Orchard Mall. It would have relatively low benefits for its cost.

I-80 to I-55 Connector
This project would connect the Illiana Expressway and the Prairie Parkway; its utility depends on their construction.

Illiana Expressway
The Illiana Expressway, a new limited-access facility running east-west through southern Will County, would help alleviate truck traffic on rural roads that is associated with intermodal

facilities. However, the improvements to I-80 and I-55 recommended in ON TO 2050 will help address these needs while also fixing infrastructure in a state of disrepair. These efforts can also support the existing communities, residents, and jobs in the subregion. The NEPA documentation under which the project could advance to construction was invalidated by federal court rulings in 2015 and 2016.

McHenry-Lake Corridor
The utility of this project, which would build a limited access facility through northeastern McHenry County, depends on the construction of the Tri-County Access.

Metra Electric Improvements / Modern Metra Electric
Several proposals to improve the Metra Electric (ME) were considered in ON TO 2050; they have promise but need more study. The line has state of good repair challenges that need to be addressed, particularly station condition, and it would have strong benefits for economically disconnected areas. Future studies of the ME should attend closely to the service plan, as initial modeling suggests that converting to 15-minute frequency (the Modern Metra Electric proposal) has negative effects on job access by eliminating express trains. The future of the ME could also benefit from restarting discussions between CTA and Metra to operate the service within the City of Chicago using the CTA fare structure.

Metra extensions
A number of extensions to Metra lines were examined for ON TO 2050 and are unconstrained (as distinct from improvements to existing lines, several of which are constrained). For the most part, they would generate limited ridership and make limited improvements to job access, although in some cases they help improve existing operations by allowing for more outlying yard space. The most cost-effective of these projects would extend the BNSF to Oswego/Plano. Preliminary engineering on this project has begun. Supportive land use planning should accompany project development, and either Kendall County or areas within the county should consider joining the RTA service area to further the project.

Metra Heritage Corridor Improvements
This project would reduce freight conflicts, upgrade infrastructure, increase service levels, and add stations. Some elements of this project are associated with CREATE. This project is in an early stage of planning.

Metra Milwaukee District North Improvements
This project would enhance the Metra Milwaukee District North line between Fox Lake and the Rondout junction in Lake County by making track, signal, and other improvements. This project is in an early stage of planning.

Metra North Central Service Improvements
This project would upgrade Metra North Central Service to allow for full service levels. This project is currently in an early stage of planning.

Metra Rock Island, UP North, and UP Northwest RER projects
Submitted by the public, these projects would convert the Metra Rock Island, UP North, and UP Northwest lines from diesel to electric operations and would provide higher-frequency, headway-based rapid transit service. Limited planning has been conducted with only high-level cost estimation. Metra is encouraged to study the system benefits and costs of electrification.

Metra SouthEast Service
This project would provide Metra service to communities in southern Cook and northern Will Counties. The project is undergoing study currently. A key element of this work should be demonstrating the ability to cover capital and operating costs and showing local financial commitment to provide matching funds for a future New Starts application. Some of the market for the project may be served by the NICTD West Lake corridor, a proposed commuter train service to Dyer, IN, that is currently advancing.

North Algonquin Fox River Crossing
This project would provide a new bridge over the Fox River in the gap between the IL 62 and US 14 bridges. It is in an early stage of planning.

North Branch Transitway
This project, in the early stages of planning, would build a new rapid transit line to serve new development associated with the North Branch Framework Plan in Lincoln Park along the Chicago River. The mode has not been determined.

O'Hare Airport Express Train
The City of Chicago is currently studying a train service that would provide a 20-minute or less travel time from O'Hare to downtown and allow baggage check-in. It would be procured as a public-private partnership. Currently at least three service concepts exist with different routes and downtown terminals. Additional study and financial information is needed before consideration for fiscal constraint.

Pace Express Bus Expansion
Pace's collaboration with IDOT and the Tollway to offer faster service by running in the shoulder of I-55 and now I-94 as well as in the flex lane on the Jane Addams has seen early success. Short-term enhancements to Pace's express bus service are considered constrained, but a longer-term look at express bus expansion opportunities will be part of the Vision for the Northeastern Illinois Expressway System project.

Pace Pulse ART Expansion Mid- and Far-Term
While the agency's focus is the constrained short-term routes, Pace's Pulse program includes a number of future routes serving developing markets. These routes would be most effective with supportive land use change over time, and municipalities should specifically seek higher densities in those corridors as part of local planning and zoning.

River North-Streeterville Transit Improvements
This project aims to speed bus service on North Michigan Avenue and elsewhere in River North. A project study is ongoing and has not reached a preferred set of improvements; more study is needed before inclusion in the plan.

S.M.A.R.T. (Suburban Metropolitan Area Rapid Transit)
Submitted by the public, this project would build a circumferential monorail. While its modeled improvement to travel times and job access are high, because of its high capital requirements, it is not cost-effective and does not address existing system needs.

STAR Line (Eastern and Northern Segments)
This project would create a new rail service from Joliet to Hoffman Estates through western Will, DuPage, and Cook Counties, and also connect from Hoffman Estates to O'Hare airport along I-90. Modeling suggests the project would have limited cost-effectiveness. Further, the transit market along I-90 is now served by Pace's express bus service in the Jane Addams flex lane, and future express bus and Pulse service could provide similar north-south connectivity.

Tri-County Access
A northern extension of IL-53 and expansion of IL-120 in Lake County could have substantial mobility benefits for the region, however a new consensus regarding this project's scope, design, and financing is needed. Prior planning efforts provide solid foundations to identify a solution, however these studies either need updating or did not complete the federally required analyses needed to support a decision. In 2017, the Illinois Tollway, in collaboration with FHWA and IDOT, initiated the Tri-County Access Project EIS to address transportation needs in eastern McHenry, northern Cook, and Lake Counties. The Tri-County Access project EIS will build on prior studies to inform the identification of a preferred alternative for transportation improvements in the project area. As it progresses, the TCA Project should identify fundable solutions that improve mobility, preserve community character, and preserve environmental quality identified in the most recent previous planning effort, the Blue Ribbon Advisory Council report from 2012.[39]

West Loop Transportation Center Phase II
This project would expand on Phase I improvements to Union Station by building north-south and east-west subway tunnels to connect CTA and Metra service. It is in an early stage of planning.

[39] "Illinois Route 53/120 Project: Blue Ribbon Advisory Council Resolution and Summary Report," June 7, 2012, https://www.illinoistollway.com/documents/20184/96209/2012-06_FinalCouncilSummaryReport_web.pdf/4a6426bf-a46b-476e-bdee-bdc4b2d26d21?version=1.0.